

# KE-436C

INSTRUCTION MANUAL



---

Please read this manual before using the machine.

Please keep this manual within easy reach for quick reference.

---

ELECTRONIC LOCKSTITCH PATTERN TACKER WITH STEPPING FOOT  
AND PROGRAMMING FUNCTION



---

**brother**<sup>®</sup>

Thank you very much for buying a BROTHER sewing machine. Before using your new machine, please read the safety instructions below and the explanations given in the instruction manual.

With industrial sewing machines, it is normal to carry out work while positioned directly in front of moving parts such as the needle and thread take-up lever, and consequently there is always a danger of injury that can be caused by these parts. Follow the instructions from training personnel and instructors regarding safe and correct operation before operating the machine so that you will know how to use it correctly.

## SAFETY INSTRUCTIONS

### 1. Safety indications and their meanings

This instruction manual and the indications and symbols that are used on the machine itself are provided in order to ensure safe operation of this machine and to prevent accidents and injury to yourself or other people.

The meanings of these indications and symbols are given below.

#### Indications

 <b>DANGER</b>	The instructions which follow this term indicate situations where failure to follow the instructions will almost certainly result in death or severe injury.
 <b>CAUTION</b>	The instructions which follow this term indicate situations where failure to follow the instructions could cause injury when using the machine or physical damage to equipment and surroundings.

#### Symbols

 ..... This symbol () indicates something that you should be careful of. The picture inside the triangle indicates the nature of the caution that must be taken.  
(For example, the symbol at left means "beware of injury".)

 ..... This symbol () indicates something that you must not do.

 ..... This symbol () indicates something that you must do. The picture inside the circle indicates the nature of the thing that must be done.  
(For example, the symbol at left means "you must make the ground connection".)

## 2. Notes on safety

### DANGER

 Wait at least 5 minutes after turning off the power switch and disconnecting the power cord from the wall outlet before opening the face plate of the control box. Touching areas where high voltages are present can result in severe injury.

### CAUTION

#### Environmental requirements

-  Use the sewing machine in an area which is free from sources of strong electrical noise such as high-frequency welders.  
Sources of strong electrical noise may cause problems with correct operation.
-  Any fluctuations in the power supply voltage should be within  $\pm 10\%$  of the rated voltage for the machine.  
Voltage fluctuations which are greater than this may cause problems with correct operation.
-  The power supply capacity should be greater than the requirements for the sewing machine's electrical consumption.  
Insufficient power supply capacity may cause problems with correct operation.
-  The pneumatic delivery capability should be greater than the requirements for the sewing machine's total air consumption.  
Insufficient pneumatic delivery capability may cause problems with correct operation.
-  The ambient temperature should be within the range of 5°C to 35°C during use.  
Temperatures which are lower or higher than this may cause problems with correct operation.
-  The relative humidity should be within the range of 45% to 85% during use, and no dew formation should occur in any devices.  
Excessively dry or humid environments and dew formation may cause problems with correct operation.
-  Avoid exposure to direct sunlight during use.  
Exposure to direct sunlight may cause problems with correct operation.
-  In the event of an electrical storm, turn off the power and disconnect the power cord from the wall outlet.  
Lightning may cause problems with correct operation.

#### Installation

-  Machine installation should only be carried out by a qualified technician.
-  Contact your Brother dealer or a qualified electrician for any electrical work that may need to be done.
-  The sewing machine weighs more than 56 kg. The installation should be carried out by two or more people.
-  Do not connect the power cord until installation is complete, otherwise the machine may operate if the foot switch is depressed by mistake, which could result in injury.
-  Hold the machine head with both hands when tilting it back or returning it to its original position.  
Furthermore, after tilting back the machine head, do not push the face plate side or the pulley side from above, as this could cause the machine head to topple over, which may result in personal injury or damage to the machine.
-  Be sure to connect the ground. If the ground connection is not secure, you run a high risk of receiving a serious electric shock, and problems with correct operation may also occur.
-  All cords should be secured at least 25 mm away from any moving parts. Furthermore, do not excessively bend the cords or secure them too firmly with staples, otherwise there is the danger that fire or electric shocks could occur.
-  Install the belt covers to the machine head and motor.
-  If using a work table which has casters, the casters should be secured in such a way so that they cannot move.
-  Be sure to wear protective goggles and gloves when handling the lubricating oil and grease, so that they do not get into your eyes or onto your skin, otherwise inflammation can result.  
Furthermore, do not drink the oil or eat the grease under any circumstances, as they can cause vomiting and diarrhoea.  
Keep the oil out of the reach of children.

## CAUTION

### Sewing

-  This sewing machine should only be used by operators who have received the necessary training in safe use beforehand.
-  The sewing machine should not be used for any applications other than sewing.
-  Be sure to wear protective goggles when using the machine.  
If goggles are not worn, there is the danger that if a needle breaks, parts of the broken needle may enter your eyes and injury may result.
-  Set the needle to the needle up stop position before turning off the power.  
If this is not done, the wiper may strike the needle, which might cause the needle to break.
-  Turn off the power switch at the following times, otherwise the machine may operate if the foot switch is depressed by mistake, which could result in injury.
  - When threading the needle
  - When replacing the needle and bobbin
  - When not using the machine and when leaving the machine unattended
-  If using a work table which has casters, the casters should be secured in such a way so that they cannot move.
-  Attach all safety devices before using the sewing machine. If the machine is used without these devices attached, injury may result.
-  Do not touch any of the moving parts or press any objects against the machine while sewing, as this may result in personal injury or damage to the machine.
-  If an error occurs in machine operation, or if abnormal noises or smells are noticed, immediately turn off the power switch. Then contact your nearest Brother dealer or a qualified technician.
-  If the machine develops a problem, contact your nearest Brother dealer or a qualified technician.

### Cleaning

-  Set the needle to the needle up stop position before turning off the power.  
If this is not done, the wiper may strike the needle, which might cause the needle to break.
-  Turn off the power switch before carrying out cleaning, otherwise the machine may operate if the foot switch is depressed by mistake, which could result in injury.
-  Be sure to wear protective goggles and gloves when handling the lubricating oil and grease, so that they do not get into your eyes or onto your skin, otherwise inflammation can result.  
Furthermore, do not drink the oil or eat the grease under any circumstances, as they can cause vomiting and diarrhoea.  
Keep the oil out of the reach of children.

### Maintenance and inspection

-  Maintenance and inspection of the sewing machine should only be carried out by a qualified technician.
-  Ask your Brother dealer or a qualified electrician to carry out any maintenance and inspection of the electrical system.
-  Set the needle to the needle up stop position before turning off the power.  
If this is not done, the wiper may strike the needle, which might cause the needle to break.
-  Turn off the power switch and disconnect the power cord from the wall outlet at the following times, otherwise the machine may operate if the foot switch is depressed by mistake, which could result in injury.
  - When carrying out inspection, adjustment and maintenance
  - When replacing consumable parts such as the rotary hook
-  Disconnect the air hoses from the air supply and wait for the needle on the pressure gauge to drop to "0" before carrying out inspection, adjustment and repair of any parts which use the pneumatic equipment.
-  If the power switch and air needs to be left on when carrying out some adjustment, be extremely careful to observe all safety precautions.
-  Hold the machine head with both hands when tilting it back or returning it to its original position.  
Furthermore, after tilting back the machine head, do not push the face plate side or the pulley side from above, as this could cause the machine head to topple over, which may result in personal injury or damage to the machine.
-  Use only the proper replacement parts as specified by Brother.
-  If any safety devices have been removed, be absolutely sure to re-install them to their original positions and check that they operate correctly before using the machine.
-  Any problems in machine operation which result from unauthorized modifications to the machine will not be covered by the warranty.

### 3. Warning labels

The following warning labels appear on the sewing machine.

Please follow the instructions on the labels at all times when using the machine. If the labels have been removed or are difficult to read, please contact your nearest Brother dealer.

1



2



3



High temperature warning display

4

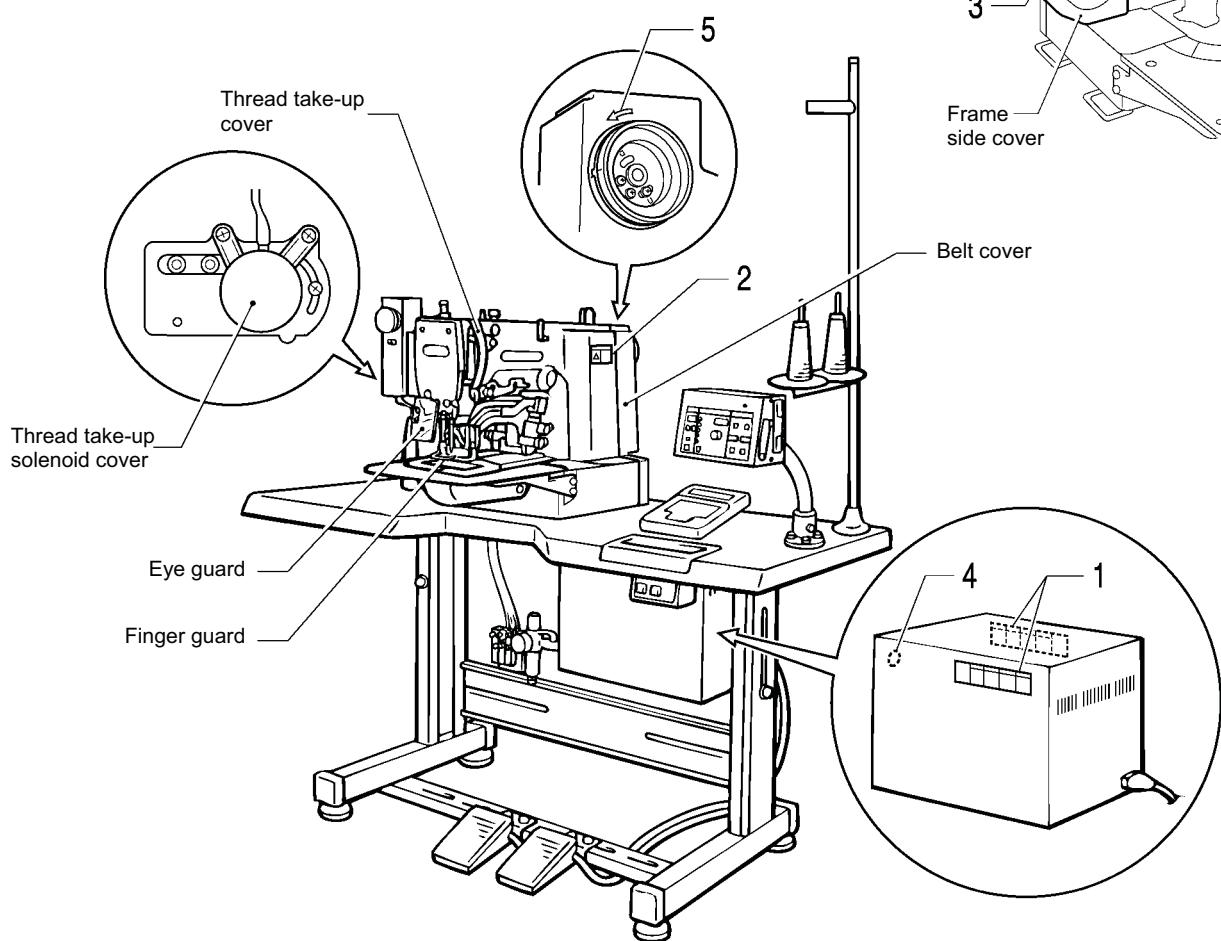


Be sure to connect the ground. If the ground connection is not secure, you run a high risk of receiving a serious electric shock, and problems with correct operation may also occur.

5



Direction of operation



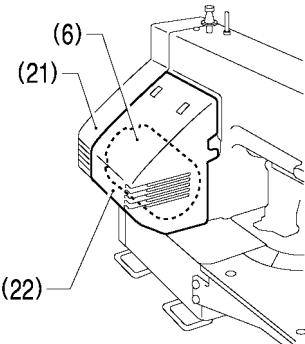
## CONTENTS

<b>1. NAME OF EACH PART .....</b>	1	6-6. Thread tension .....	31
<b>2. SPECIFICATIONS .....</b>	2	<b>7. SEWING .....</b>	34
2-1. Specifications .....	2	7-1. Before starting sewing.....	34
<b>3. INSTALLATION .....</b>	3	7-2. Sewing operation .....	34
3-1. Power table.....	3	<b>8. MAINTENANCE AND INSPECTION.....</b>	36
3-2. Installing the control box.....	4	8-1. Checking the needle .....	36
3-3. Installing the rubber cushions .....	5	8-2. Cleaning the rotary hook .....	36
3-4. Installing the oil pan.....	5	8-3. Lubrication .....	37
3-5. Installing the cushions .....	5	8-4. Draining the oil .....	38
3-6. Installing the switching plate .....	6	8-5. Cleaning the control box air inlet port.....	38
3-7. Installing the machine head .....	6	8-6. Cleaning the air holes of belt cover and frame side cover.....	38
3-8. Installing the head rest .....	7	8-7. Cleaning the eye guard .....	38
3-9. Installing the liquid cooling tank, optional.....	7	<b>9. STANDARD ADJUSTMENTS .....</b>	39
3-10. Installing the operation panel.....	7	9-1. Adjusting the needle bar height.....	39
3-11. Installing the programmer (option).....	8	9-2. Adjusting the needle bar lift amount.....	39
3-12. Connecting the ground wire.....	8	9-3. Adjusting the driver needle guard.....	40
3-13. Connecting the cords.....	9	9-4. Adjusting the needle clearance .....	40
3-14. Piping .....	11	9-5. Adjusting the shuttle race thread guide .....	40
3-15. Installing the belt cover .....	13	9-6. Adjusting the thread take-up amount .....	41
3-16. Installing the foot switch.....	13	9-7. Adjusting the movable knife .....	42
3-17. Installing the needle sub plate .....	14	9-8. Adjusting the work clamp lift amount.....	44
3-18. Installing the spool stand .....	15	9-9. Work clamp adjustment.....	45
3-19. Installing the eye guard.....	15	9-10. Changing the work clamp lift .....	45
<b>4. LUBRICATION.....</b>	16	9-11. Work clamp interchangeability .....	46
4-1. Lubrication points .....	16	9-12. Adjusting the needle up stop position.....	46
<b>5. USING THE OPERATION PANEL .....</b>	17	9-13. Adjusting the thread wiper.....	47
5-1. Explanation of panel.....	17	9-14. Adjustment of air pressure .....	47
5-2. Using the floppy disk .....	19	9-15. Checking the input sensor and DIP switch input .....	48
5-3. Using the program R/W (Read/Write) switch .....	21	9-16. Checking the input voltage .....	49
5-4. Operating the foot switch .....	22	9-17. Clearing all memory settings .....	49
5-5. Using the TEST switch (Checking the sewing pattern).....	22	<b>10. DIP SWITCH.....</b>	50
5-6. Using the emergency stop switch .....	23	10-1. Panel DIP switch functions.....	50
5-7. Using the thread wiper switch.....	23	10-2. DIP switches inside the control box.....	51
5-8. Adjusting the sewing SPEED control .....	24	<b>11. CHANGING SPECIAL FUNCTIONS         USING THE MEMORY SWITCHES .....</b>	52
5-9. Changing the X-SCALE and Y-SCALE settings .....	24	<b>12. SETTING THE WORK CLAMP MODE .....</b>	56
5-10. Using the bobbin thread counter.....	25	12-1. Light work clamp .....	57
5-11. Using production counter.....	26	<b>13. TABLE OF ERROR CODES .....</b>	58
5-12. Using single split mode.....	27	<b>14. GAUGE PARTS LIST ACCORDING         TO SUBCLASSES .....</b>	60
5-13. Shifting a stitch pattern .....	28	<b>15. TROUBLESHOOTING .....</b>	63
<b>6. CORRECT USE .....</b>	29	<b>16. OPTIONAL PARTS .....</b>	66
6-1. Selecting the needle and thread .....	29		
6-2. Installing the needle.....	29		
6-3. Threading the upper thread .....	29		
6-4. Winding the lower thread.....	30		
6-5. Replacing the bobbin case and threading the thread .....	31		

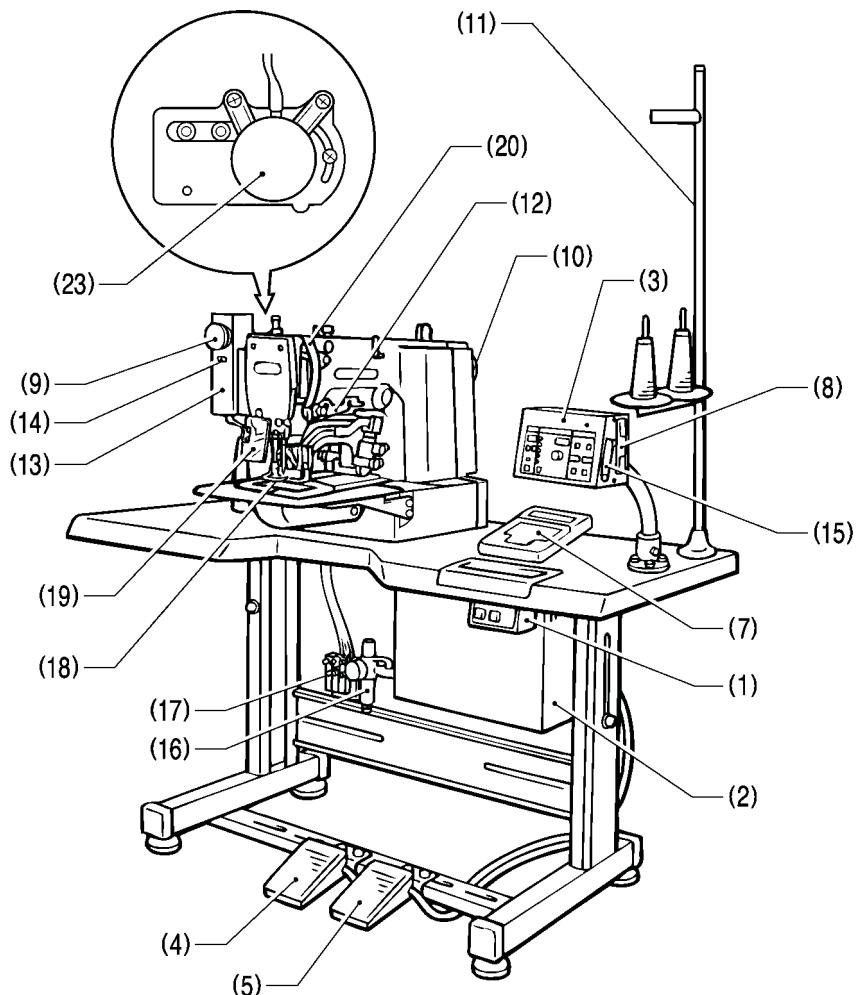
## 1. NAME OF EACH PART

### 1. NAME OF EACH PART

2672Q



2671Q



#### Safety devices;

- (1) Power switch
- (2) Control box
- (3) Operation panel
- (4) Work clamp switch
- (5) Start switch
- (6) Motor
- (7) Programmer
- (8) Floppy drive
- (9) EMERGENCY STOP switch
- (10) Pulley
- (11) Spool stand
- (12) Thread take-up lever
- (13) Wiper solenoid cover
- (14) Thread wiper switch
- (15) Dip switch
- (16) Integrator
- (17) Solenoid valve
- (18) Finger guard
- (19) Eye guard
- (20) Thread take-up cover
- (21) Belt cover
- (22) Frame side cover
- (23) Thread take-up solenoid cover

## 2. SPECIFICATIONS

### 2-1. Specifications

BROTHER INDUSTRIES, LTD.

• KE-436C •

Stitch formation	Single needle lock stitch
Maximum sewing speed	2,500 rpm (Pitch 3 mm)
Maximum pattern size	100 × 60 mm max.
Feed mechanism	R-θ intermittent feed mechanism (pulse-motor driven mechanism)
Stitch length	0.1 - 10.0 mm
Number of stitches	Variable
Maximum stitch number	20,000 stitches (One pattern)
Work clamp lifter	Pneumatic type
Work clamp height	25 mm max.
Rotary hook	Shuttle hook (shuttle hook 2, optional)
Wiper device	Standard equipment
Thread trimmer device	Standard equipment
Thread take-up device	Standard equipment
Stepping foot lift amount	18 mm
Stepping foot stroke	0 mm, 3 - 8 mm
Safety device	built-in stopping mechanism
Data storage method	3.5 floppy disk 2HD / 1.44MB, 2DD
Motor	Three-phase 400W induction motor
Weights	Machine head: 56 kg, Operation panel: 2.8 kg, Control box: 10 - 20 kg (depending on destination)
Power source	Single-phase 110, 220 - 230, 240V 3-phase 220 - 230, 380, 400V Maximum electric power consumption; 600VA

[Main use]

Patterns up to a maximum size of 100 mm × 60 mm can be sewn.

For plain stitching of small articles, curtain darts, etc.

Two-stage work clamp, light work clamp and inner clamping device (optional) can be used.

For attaching items, sewing labels, etc.

### 3. INSTALLATION

## 3. INSTALLATION

### CAUTION

- Machine installation should only be carried out by a qualified technician.
- Contact your Brother dealer or a qualified electrician for any electrical work that may need to be done.
- The sewing machine head weighs more than 56 kg. The installation should be carried out by two or more people.
- Do not connect the power cord until installation is complete, otherwise the machine may operate if the foot switch is depressed by mistake, which could result in injury.
- Hold the machine head with both hands when tilting it back or returning it to its original position. Furthermore, after tilting back the machine head, do not push the face plate side or the pulley side from above, as this could cause the machine head to topple over, which may result in personal injury or damage to the machine.
- All cords should be secured at least 25 mm away from any moving parts. Furthermore, do not excessively bend the cable or secure it too firmly with staples, otherwise there is the danger that fire or electric shocks could occur.
- Be sure to connect the ground. If the ground connection is not secure, you run the risk of receiving a serious electric shock, and problems with correct operation may also occur.
- Install the belt covers to the machine head and motor.

### 3-1. Power table

- Use the power table which has been specially designed for each sewing machines.
- \* If using a commercially-available table, process it as shown in the illustration below.

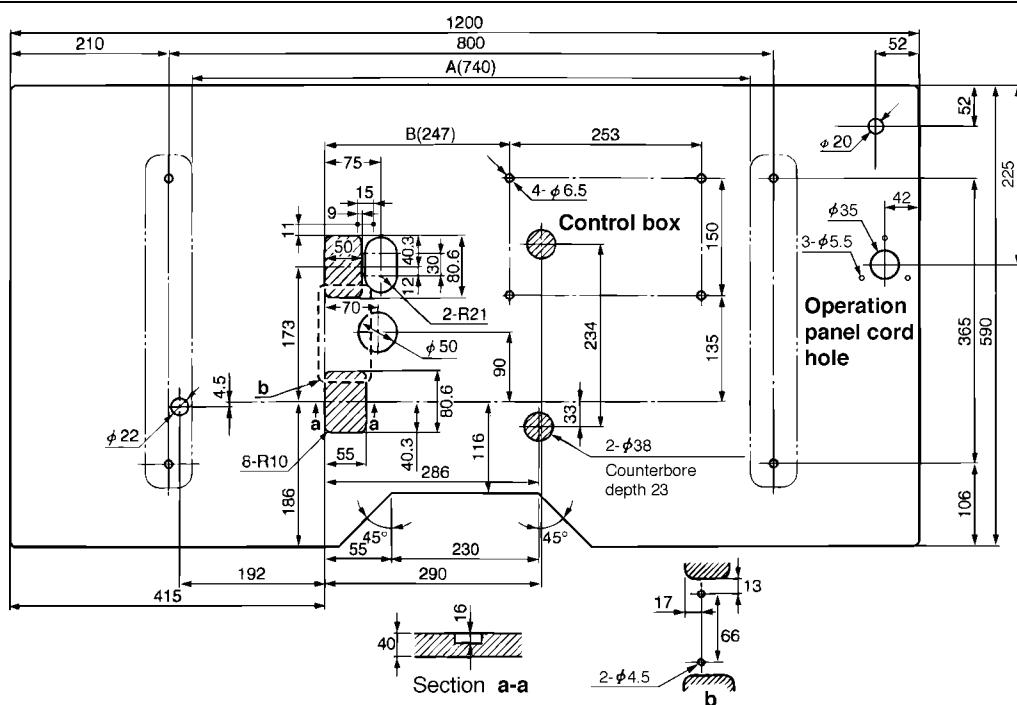
	Model code
Table/ legs assembly	127-P34-50001

#### Note:

The thickness of the table should be at least 40 mm, and it should be strong enough to bear the weight and vibration of the sewing machine.

If the distance A between the insides of the legs is less than 740 mm, move the control box installation position to the left (B = 247 mm).

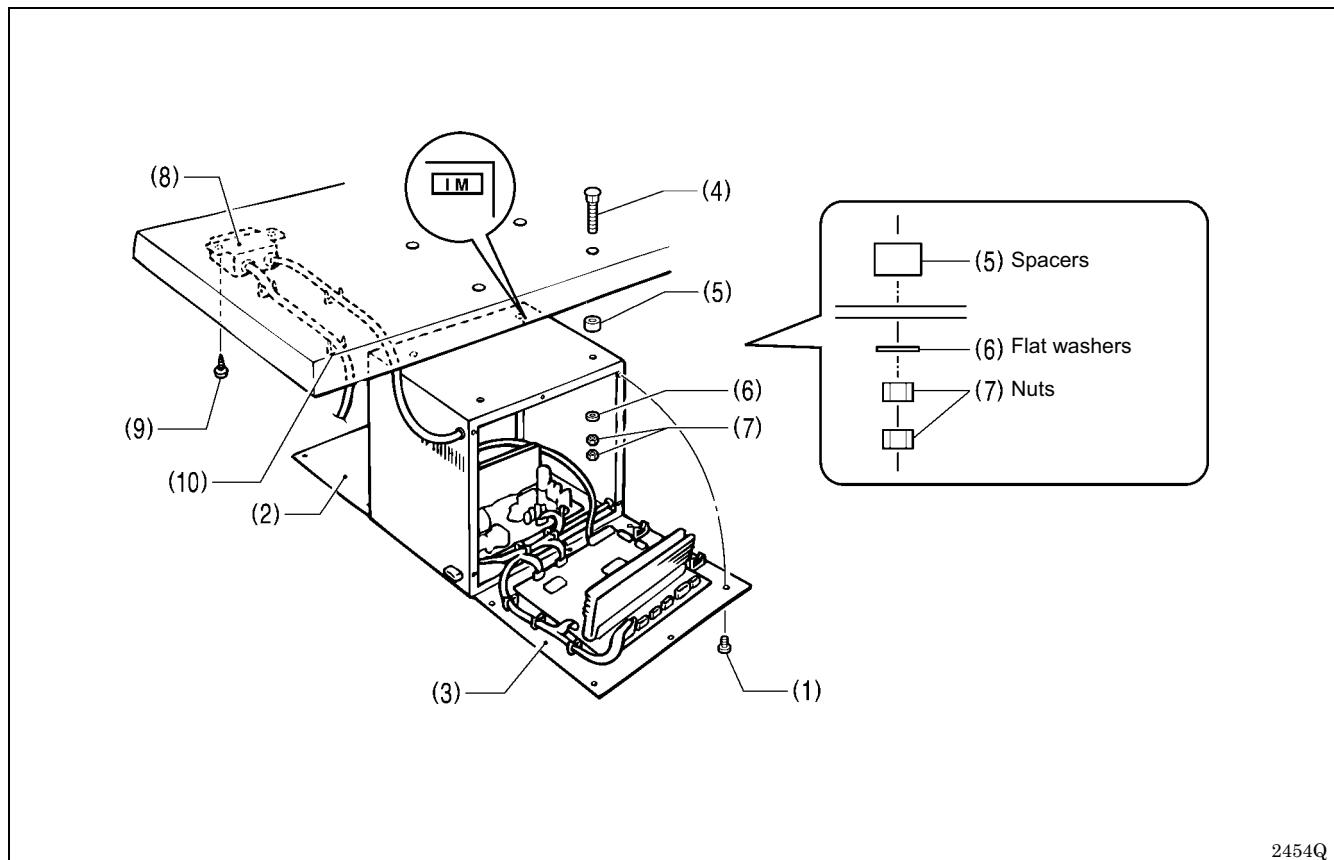
Check that the control box is at least 10 mm away from the leg. If the control box and leg are touching, it could cause the sewing machine to operate incorrectly.



1090Q

### 3-2. Installing the control box

Check that the IM sticker is attached to the side of the control box (in the position shown in the illustration). (KE series machine heads can only be used with control boxes which have the IM sticker attached.)

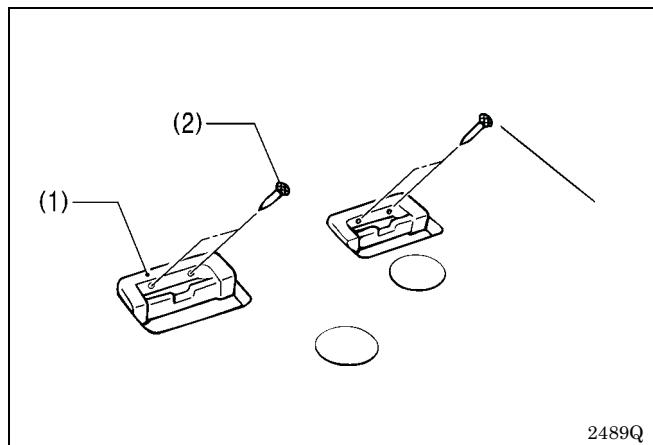


2454Q

1. Remove the 12 screws (1), and then open the covers (panel mounting assembly (2) and main P.C. board mounting plate (3)).
- Note:**  
When opening the cover, hold it securely so that it does not fall down.
2. Install the control box with the four accessory bolts (4), spacers (5), flat washers (6) and nuts (7) as shown in the illustration above.  
\* Use two nuts (7) at each installation location, and make sure that both nuts are tightened.
3. Close the covers (panel mounting assembly (2) and main P.C. board mounting plate (3)), and tighten them with the screws (1).  
\* The main P.C. board mounting plate (3) will be opened again during "3-13. Connecting the cords", so provisionally tighten it with the screw (1).
4. Install the power switch (8) with the two screws (9).
5. Secure the power switch cord with the three staples (10).

### 3. INSTALLATION

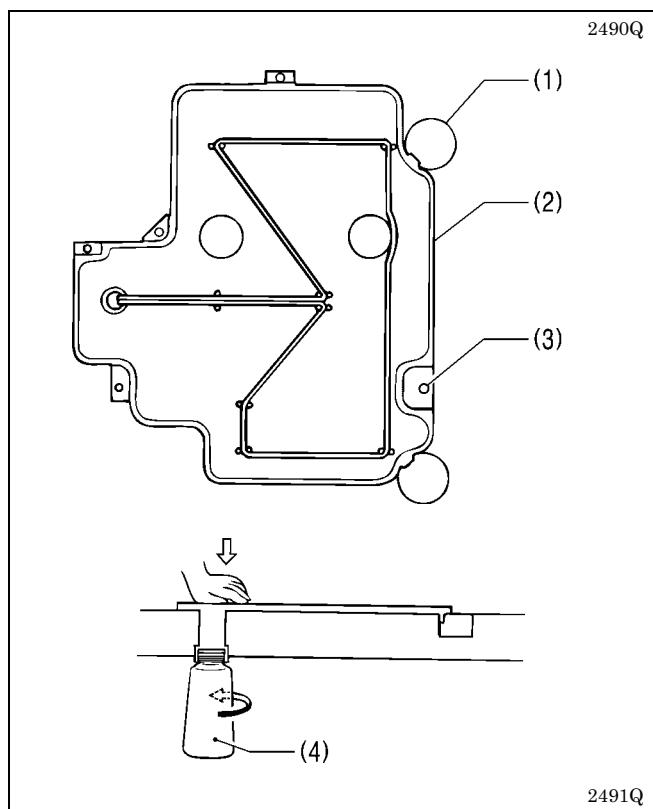
#### 3-3. Installing the rubber cushions



Install the rubber cushions (1) with the nails (2).

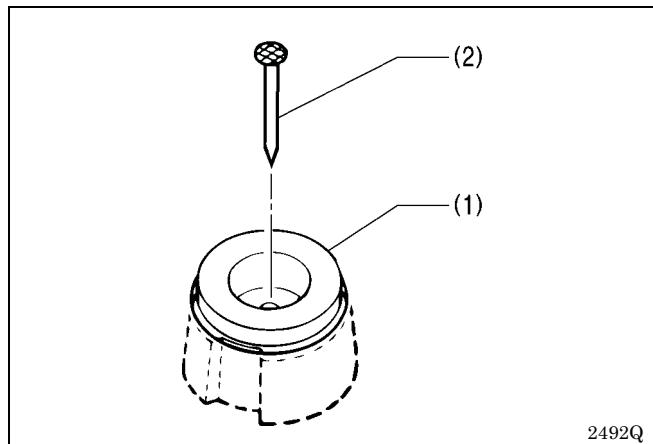
- \* Install so that the head of the nail dose not protrude from the rubber surface.

#### 3-4. Installing the oil pan



1. Insert the tabs of the oil pan (2) into the holes for the cushions (1), and then secure it in place with the five nails (3) so that the oil pan (2) is not at an angle.
2. While pushing the oil pan (2) down from above, screw in the oil container (4).

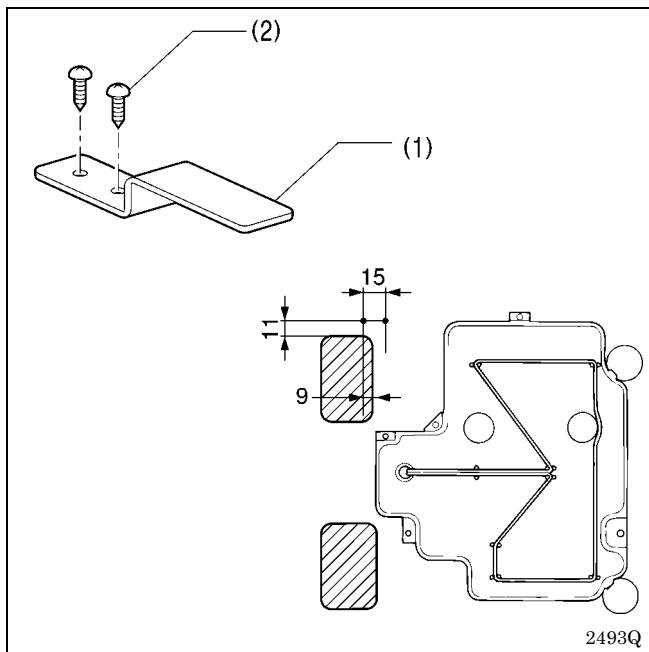
#### 3-5. Installing the cushions



Place the two cushions (1) into the holes in the work table so that the notches are aligned with the tabs in the oil pan, and secure them in place with the nails (2).

- \* Install so that the head of the nail dose not protrude from the rubber surface.

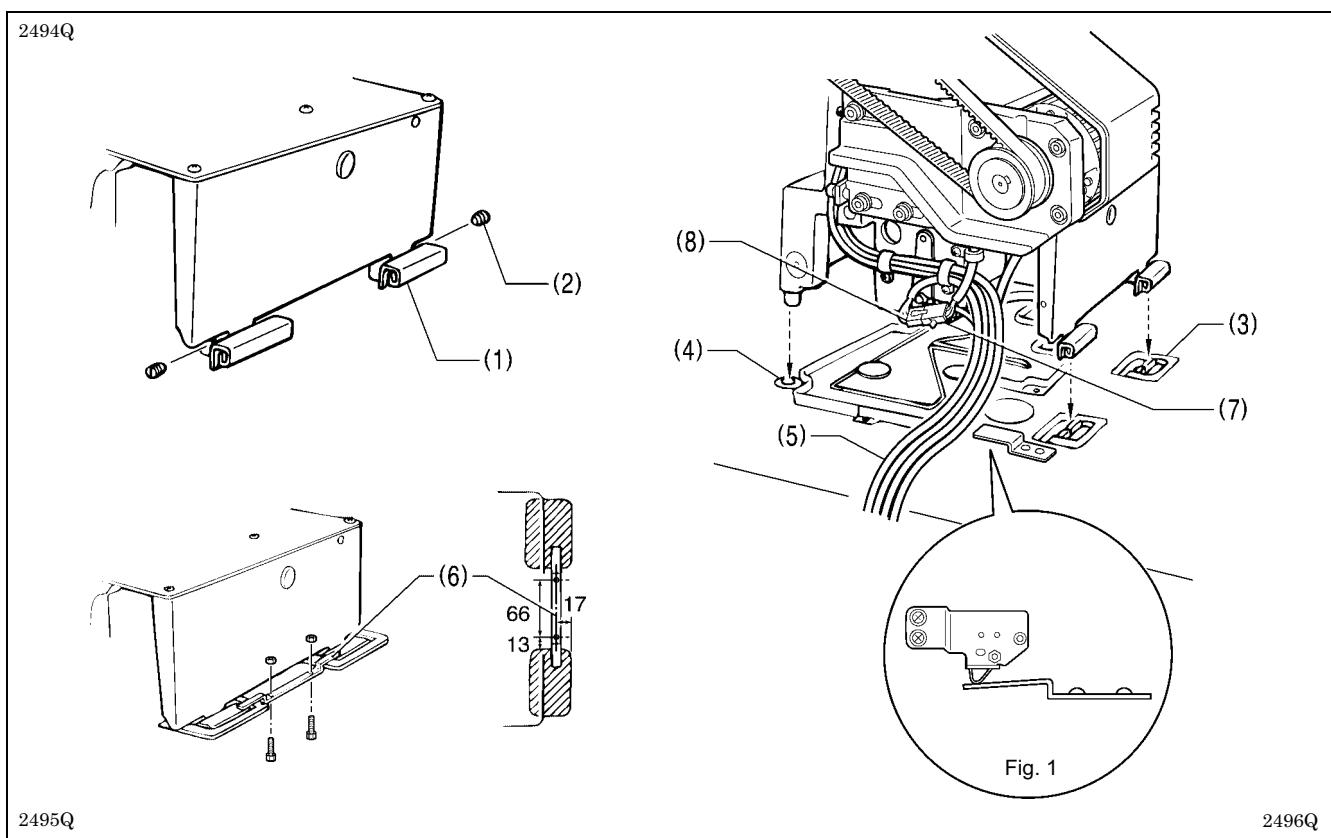
### 3-6. Installing the switching plate



Install the switching plate (1) to the work table with the two wood screws (2) in the position shown in the illustration.

\* The switching plate and the switch bracket which is attached to the machine head prevent the sewing machine from starting when the machine head is tilted back. Therefore, this means that the sewing machine will not start if the switching plate is not installed.

### 3-7. Installing the machine head



1. Insert the head hinges (1) into the machine head so that they are parallel, and then secure them with the two set screws (2).
2. Place the machine head gently on top of the rubber cushions (3) and cushions (4).

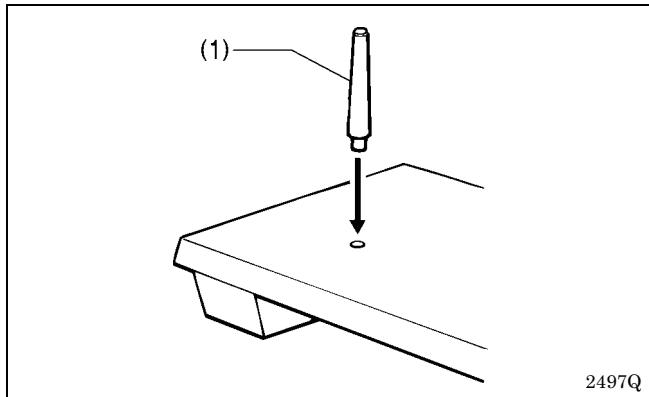
**Note:**

Pull the cords (5) out as shown in the illustration above in order to prevent them from being clamped by the machine head.

3. Install the hinge presser (6) with the two bolts and two nuts.
4. Check that the head position switch is turned on as shown in Figure 1.
5. Connect the motor cord connector (7) to the accessory cord connector (8).

### 3. INSTALLATION

#### 3-8. Installing the head rest

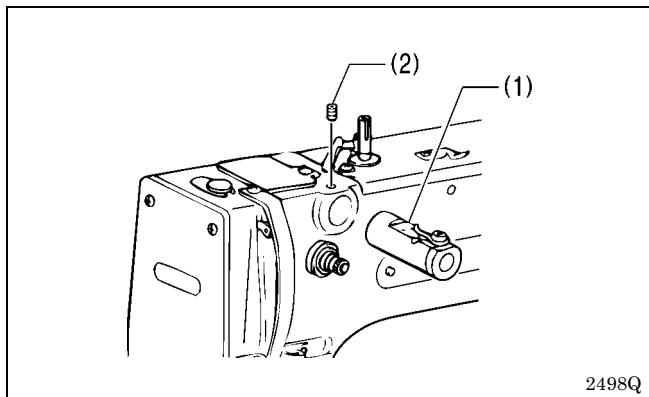


Tap the head rest (1) into the table hole.

**Note:**

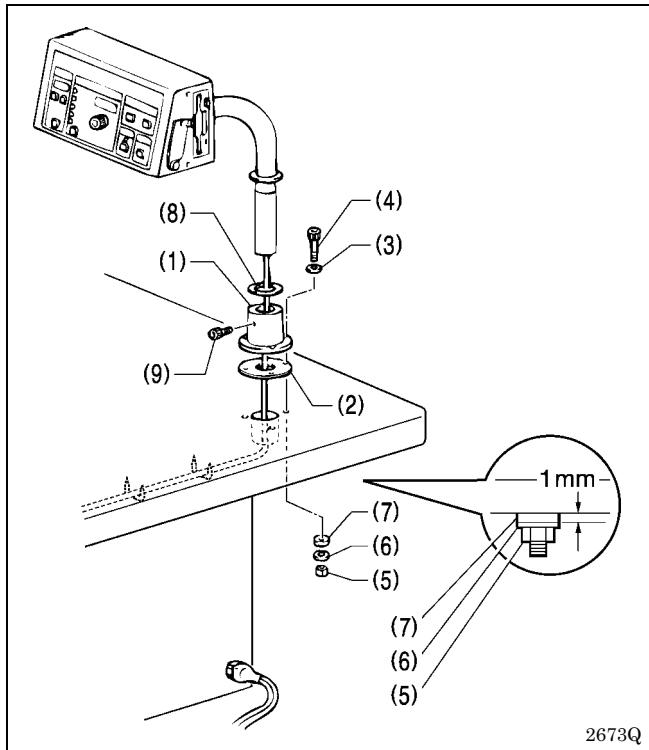
Tap the head rest securely into the table hole.

#### 3-9. Installing the liquid cooling tank, optional



1. Remove the rubber plug, and then push the liquid cooling tank (1).
2. Tighten it with the set screw (2).

#### 3-10. Installing the operation panel



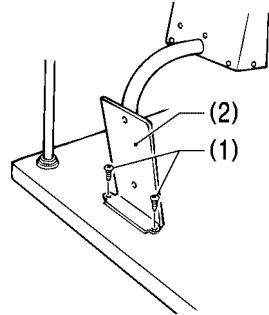
1. Assemble the operation panel stand (1) and cushion A (2). Then insert the bolts (4) together with the washers (3) into the three holes from above, and then tighten the nuts (5), washers (6) and cushion B (7) from below to secure the assembly.

**Note:**

2. Tighten until the thickness of cushion B (7) becomes about 1 mm.
3. Pass the cords of the control panel assembly through the hole in the operation panel stand (1).
4. Attach the rubber sheet (8) to the hole in the operation panel stand (1) and then secure it with the bolt (9).
5. Insert the cord into the control box through the hole at the side of the box. Refer to "3-13. Connecting the cords" for details on connecting the cord.
6. Secure the cord with the staples (in five places).

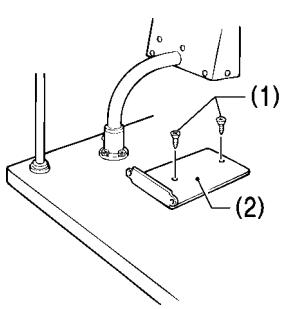
### 3-11. Installing the programmer (option)

[Vertical]

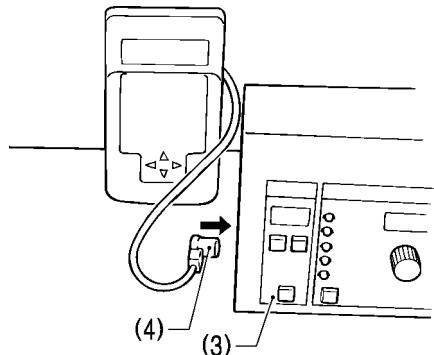


2674Q

[Flat]



2675Q



2676Q

1. Install the programmer support (2) to the work table with the two screws (1).

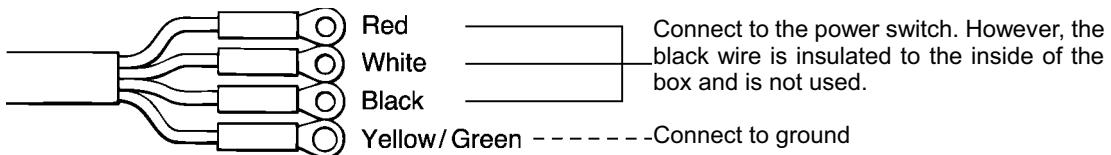
2. Insert the programmer connector (4) securely into the left side of the operation panel (3).

### 3-12. Connecting the ground wire

#### CAUTION



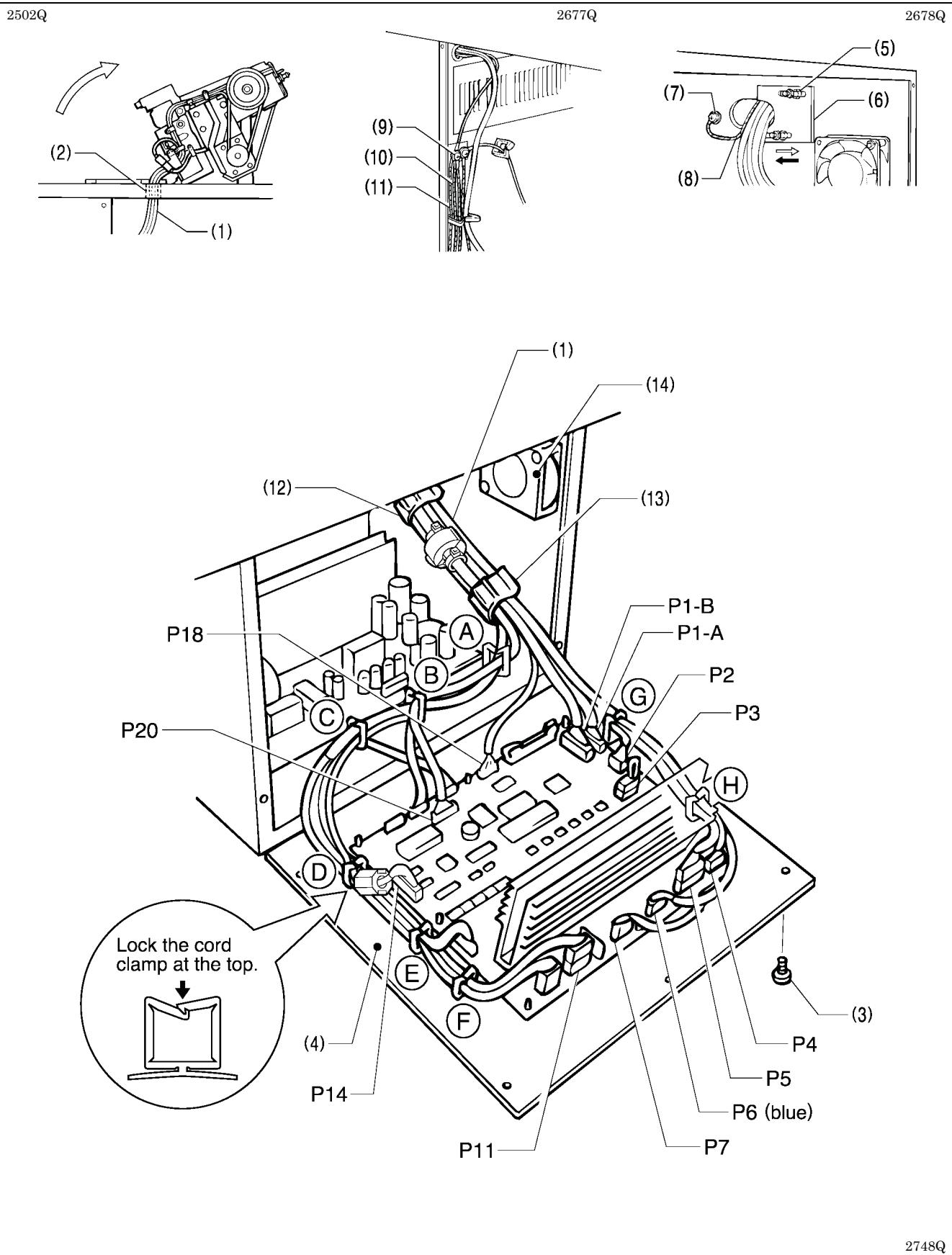
Be sure to connect the ground. If the ground connection is not secure, you run the risk of receiving a serious electric shock, and problems with correct operation may also occur.



2741Q

### 3. INSTALLATION

#### 3-13. Connecting the cords



- Gently tilt back the machine head.

**Note:**

After tilting back the machine head, do not push the face side or the pulley side from above.

- Pass the cord bundle (1) from the machine head through the hole (2) in the work table.
- Gently return the machine head to its original position.
- Remove the six screws (3), and then open the control box cover (main P.C. board mounting plate (4)).

**Note:**

When opening the cover, hold it securely so that it does not fall down.

- Loosen the two screws (5), and then open the cord presser plate (6) in the direction of the white arrow and pass the cord bundle (1) through the opening.
- Remove the screw (7), and then pass it through the terminal holes in the ground cord (8) from the machine head. Then re-tighten the screw (7) so that the ground cord (8) is secured as shown in the illustration.
- Remove the screw (9), and then pass it through the terminal hole in the ground cord (10) from the upper shaft motor and the ground cord (11) from the operation panel. Then re-tighten the screw (9) so that the ground cords (10) and (11) are secured as shown in the illustration.

**Note:**

Make sure that the ground connections are secure in order to ensure safety.

- Securely connect connectors P1 to P7, P11, P14, P18 and P20 as indicated in the table below.

**Note:**

Check that the connector is facing the correct way, and then insert it firmly until it locks into place.

Furthermore, lock the cord clamp at the top.

Machine head connectors			Connection location on circuit board	Cord clamps used
Connection location	No. of pins	Cord mark		
Head position switch	9-pin	[1A]	P1-A (ORG1)	None
X, Y, Sewing sensor	12-pin	[1]	P1-B (ORG2)	None
Synchronizer	5-pin	[2]	P2 (SYNCHRO)	(G)
Machine specification select connector	8-pin	[3]	P3 (SELECT)	None
Thread wiper solenoid Thread take-up solenoid	5-pin	[4]	P4 (SOL2)	(G)(H)
Presser solenoid Thread trimmer solenoid	4-pin	[5]	P5 (SOL)	(G)(H)
Pulse motor, Y	4-pin (blue)	[6]	P6 (YPM)	(G)(H)
Pulse motor, X	4-pin	[7]	P7 (XPM)	(G)(H)
Operation panel	10-pin	[M]	P20 (RSPORT)	(A)(B)
Upper shaft motor	3-pin	None	P11 (UVW)	(A)(B)(C)(D)(E)(F)
EMERGENCY STOP switch	6-pin	[18]	P18 (HEAD)	None
Solenoid valve	12-pin	None	P14 (AIR)	(A)(B)(C)(D)

- Secure the cord bundle (1) with the cord clamps (12) and (13).
- Close the cord presser plate (6) in the direction of the black arrow, and secure it by tightening the screws (5).

**Note:**

Check that the cords do not get pulled when the machine head is tilted back gently.

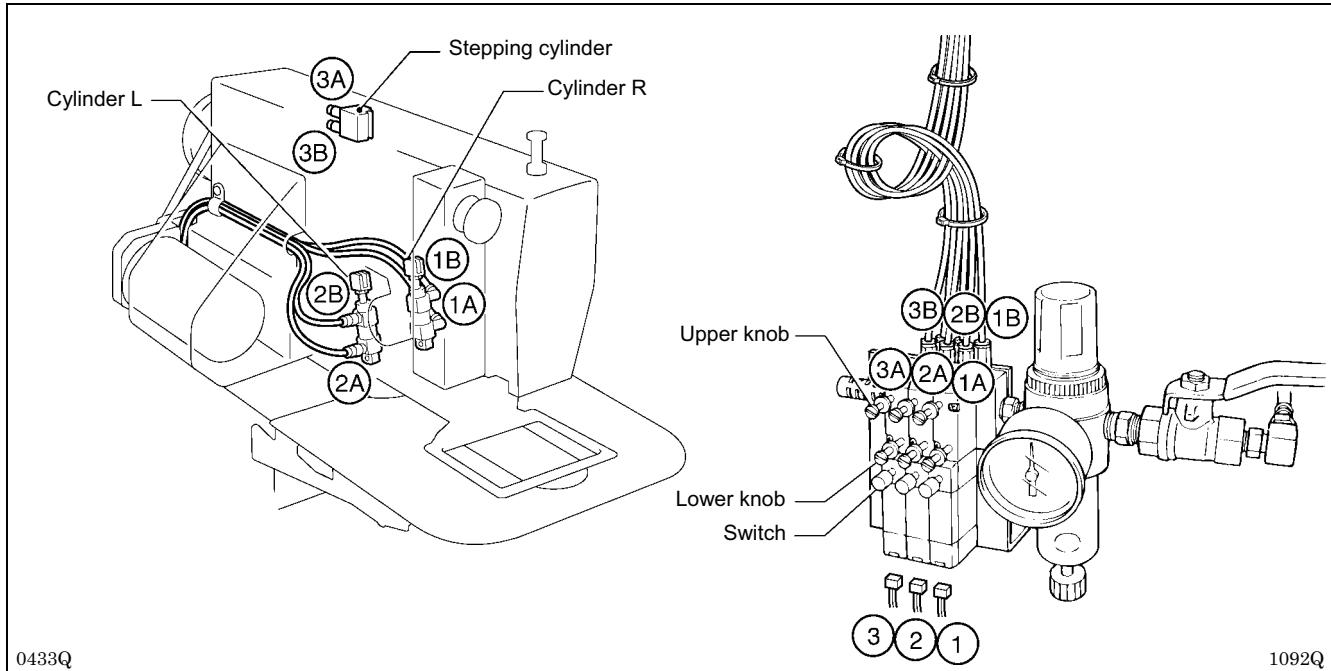
- Tighten the cover (main P.C. board mounting plate (4)) with the six screws (3).

**Note:**

Check that the cords do not come into contact with the fan (14) and that they are not clamped by the cover at this time.

### **3. INSTALLATION**

## 3-14. Piping

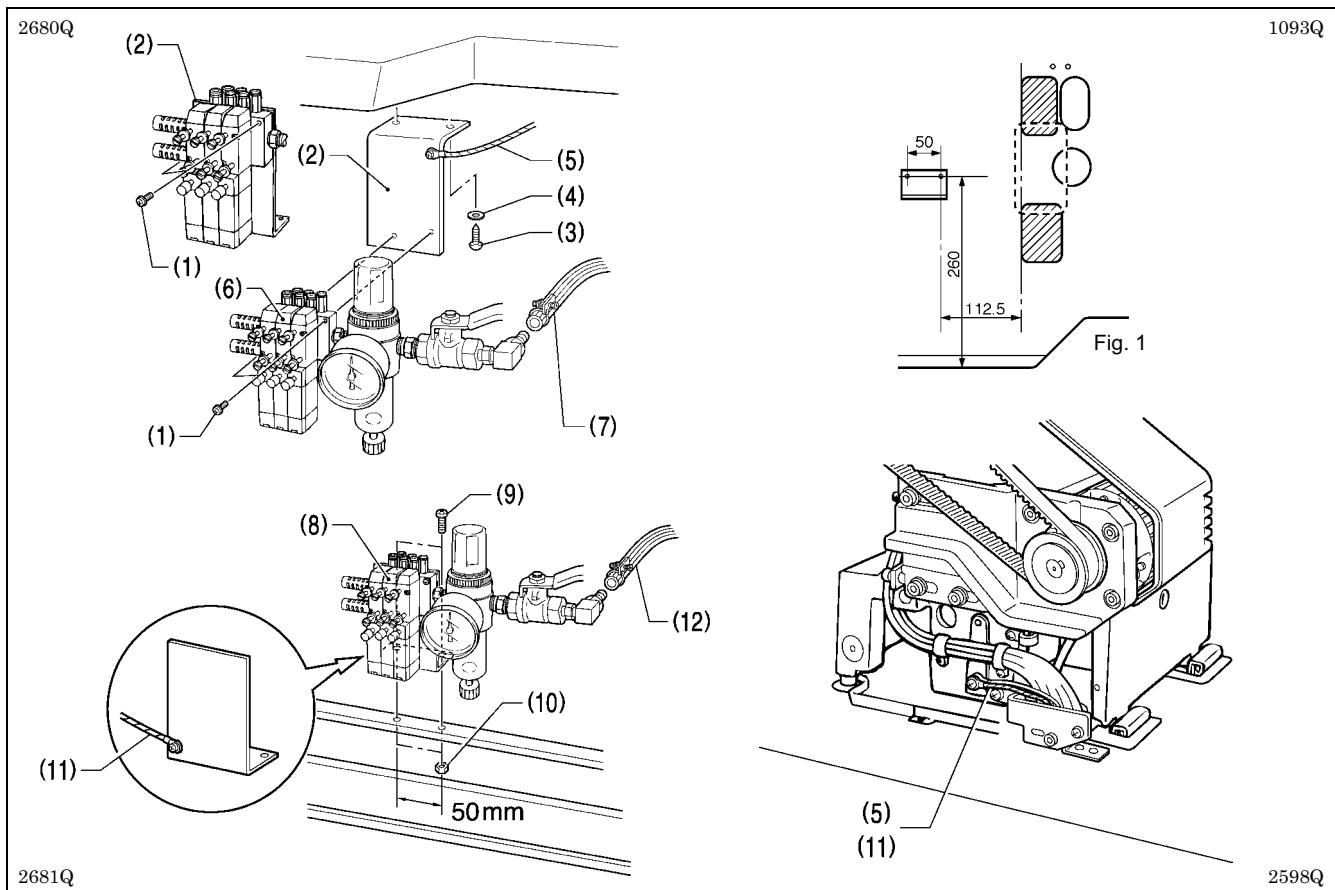


Connect air tubes in accordance with the identified numbers in the figure, and then bind them with some fastening bands. Be sure not to crush the air tubes at that time.

\* Light work clamp mode can be used by changing over the air tube connections. (Refer to "12. Setting the work clamp mode".)

### 3-14-1. Installing the air unit

Make sure that the air unit does not touch the control box or the work table leg.



<When installing to the underside of the work table>

1. Remove the two screws (1) and the valve setting plate (2).
2. Turn the valve setting plate (2) upside down, and install it to the underside of the work table using the two wood screws (3) and washers (4) which are provided as accessories.  
\* At this time, install the valve setting plate (2) in a position where it will not be in the way when using the machine. (The recommended installation position is shown in Figure 1.)
3. Install the ground cord (5) to the machine head.
4. Install the air unit (6) to the valve setting plate (2) with two screws (1).
5. Connect the air hose (7).
6. Adjust the air pressure. (Refer to "9-14. Adjusting the air pressure".)

<When installing to a beam>

1. Make holes in the beam as shown in the illustration above. (Button hole diameter is 5.4 mm. The pitch is 50mm.)
2. Install the air unit (8) to the beam with two accessory screws (9) and two bolts (10).
3. Install the ground cord (11) to the machine head.
4. Connect the air hose (12).
5. Adjust the air pressure. (Refer to "9-14. Adjusting the air pressure".)

### 3-14-2. Adjusting the speed controller

The speeds at which the work clamps are raised and lowered can be adjusted by loosening or tightening the valve control knobs. The speeds should be adjusted to speeds which are suitable for the intended application.

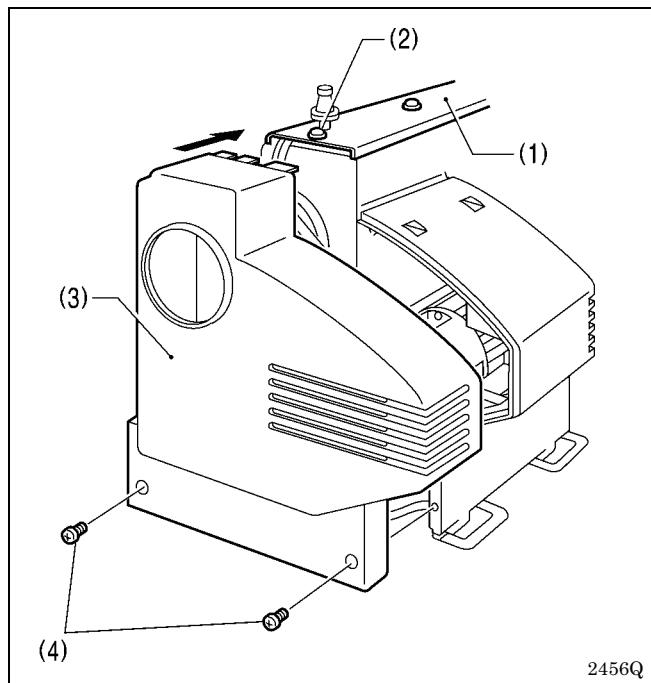
- If the upper control knob is tightened, the raising speed becomes slower; if it is loosened, the raising speed becomes faster.
- If the lower control knob is tightened, the lowering speed becomes slower; if it is loosened, the lowering speed becomes faster.
- When the power is turned off, the work clamps can be operated by pressing the switch.

**Note:**

Adjust the control knobs so that the left and right work clamps both operate at the same speed. (Valve 1 and 2)  
Adjust the control knobs so that the stepping work clamp operates more quickly. (Valve 3)

### 3. INSTALLATION

#### 3-15. Installing the belt cover

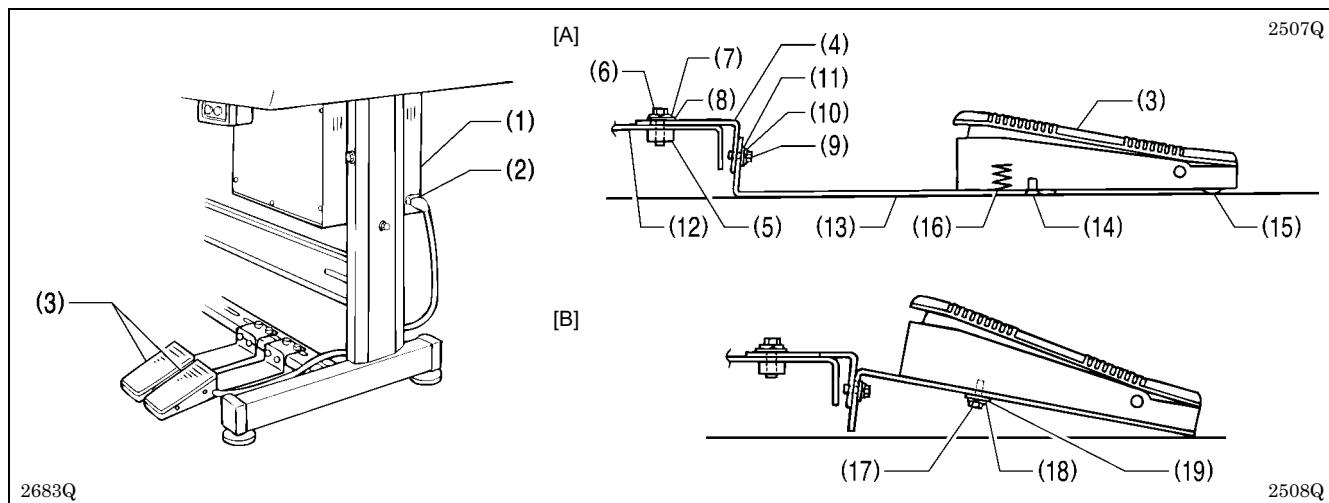


1. Loosen the screws (2) of the upper cover (1).
2. Insert the belt cover (3) in the direction of the arrow, and then secure it with the two screws (2) and the two screws (4).

Check that the cords do not get clamped by the belt cover at this time.

\* It is not necessary to remove the belt cover (3) when tilting back the machine head.

#### 3-16. Installing the foot switch



1. Insert the connector of the foot switch (3) into the connector (2) of the control box (1).
2. Install the foot switch (3) to the work table leg (12) with foot switch support plate A (4), foot switch support plate C (5), the bolt (6), spring washer (7), flat washer (8), bolt (9), spring washer (10) and flat washer (11) as shown in Figure A.

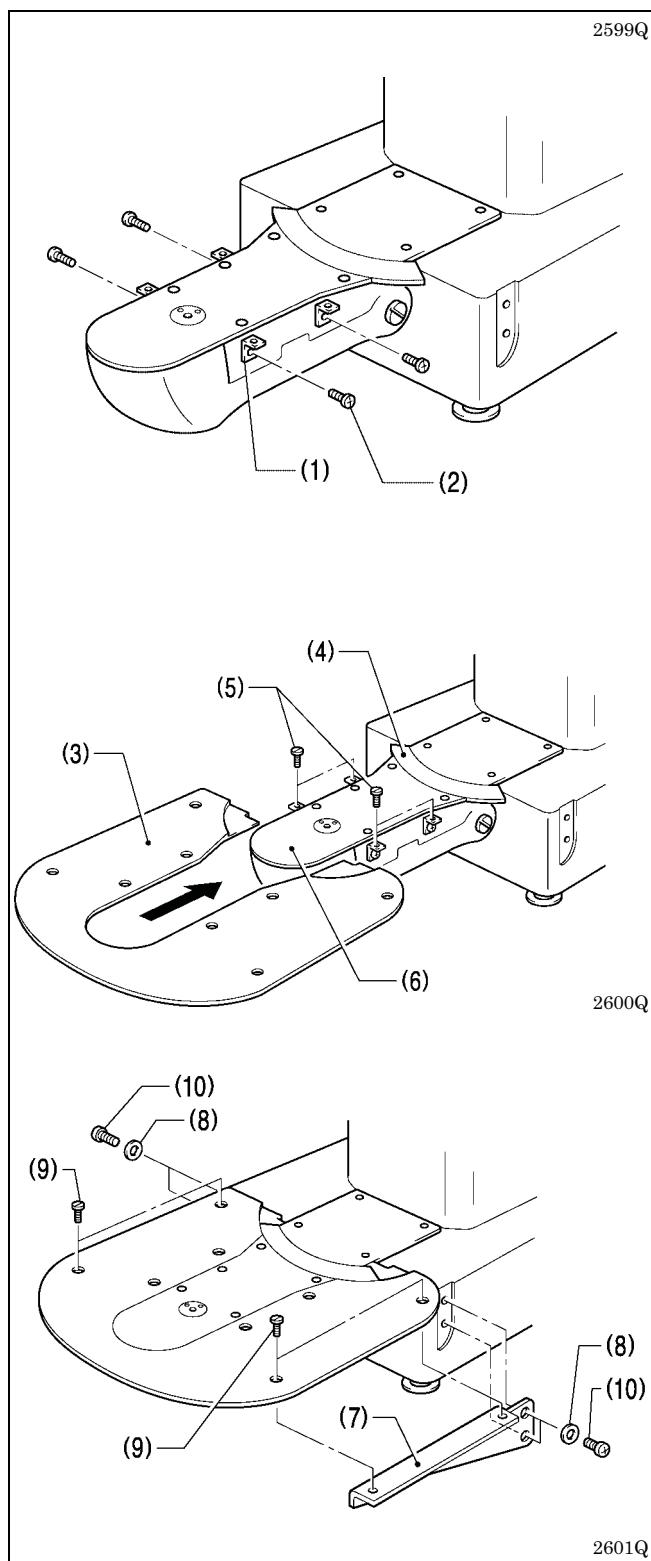
If foot switch support plate B (13) is used in a back-to-front position, it can be used as shown in Figure B.

1. Remove the screw (14) and rubber plug (15).  
\* Note that the spring (16) will come out when the screw (14) is removed.
2. Turn foot switch support plate B (13) back to front, and then install it with the bolt (17), spring washer (18) and flat washer (19) as shown in Figure B.

**Note:**

If using the foot switch without installing it to the work table leg, move the foot switch at least 10 mm away from the leg. If the foot switch is not fully in contact with the work table leg when the foot switch is used, for example, if it is just hooked loosely onto the work table leg, it may cause the sewing machine to operate incorrectly.

### 3-17. Installing the needle sub plate



1. Install the four needle sub plate supports (1) with the four screws (2).

2. Insert the needle sub plate (3) from the front of the machine so that it is level.

**Note:**

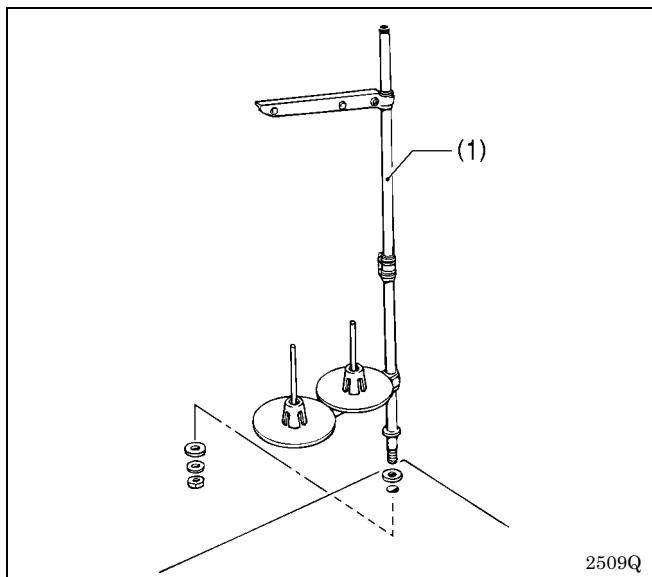
Insert the needle sub plate (3) so that the X feed lever cap (4) sits on top of the needle sub plate (3).

3. Install the needle sub plate (3) with the four screws (5).
4. Loosen the screws (2) and make fine adjustments to the height of the needle sub plate (3) so that it is at the same height as the needle plate (6).

5. Provisionally secure the two auxiliary plate supports (7) with the washers (8) and the screws (9) and (10), and then firmly tighten the screws (9) and (10) in that order.

### 3. INSTALLATION

#### 3-18. Installing the spool stand

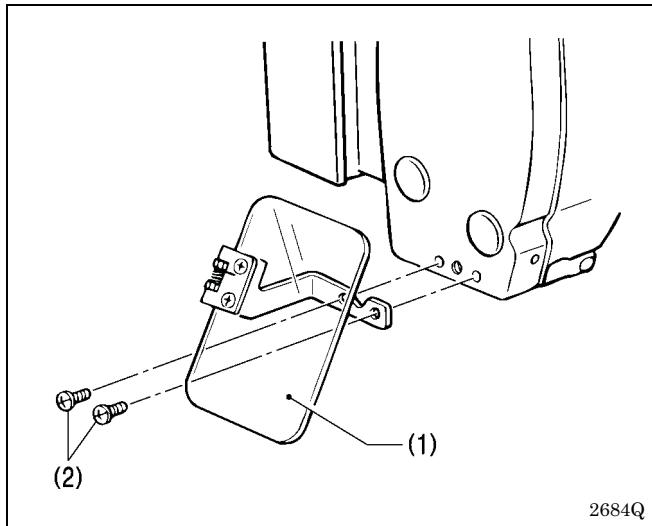


Assemble the spool stand (1) while referring to the spool stand instruction manual, and then install the spool stand (1) at the right side of the work table.

#### 3-19. Installing the eye guard

##### CAUTION

Attach all safety devices before using the sewing machine.  
If the machine is used without these devices attached, injury may result.



Install the eye guard assy (1) to the face plate with the two screws (2).

## 4. LUBRICATION

### **CAUTION**

 Turn off the power switch before starting lubricating, otherwise the machine may operate if the foot switch is depressed by mistake, which could result in injury.

 Be sure to wear protective goggles and gloves when handling the lubricating oil and grease, so that they do not get into your eyes or onto your skin, otherwise inflammation can result.  
Furthermore, do not drink the oil or eat the grease under any circumstances, as they can cause vomiting and diarrhoea.  
Keep the oil out of the reach of children.

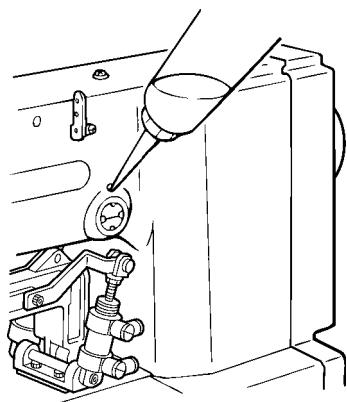
Note 1: Fill the machine with oil when the oil level is down to about one-third full in the oil sight glass.  
If oil is not added and the oil drops below this level, there is the danger that the machine may seize during operation.

Note 2: Be sure to let the machine operate for a while after adding the oil.

Note 3: If there is no more oil on the felt of the shuttle race base, problems with sewing may result, so add oil to the felt until it is slightly soaked.

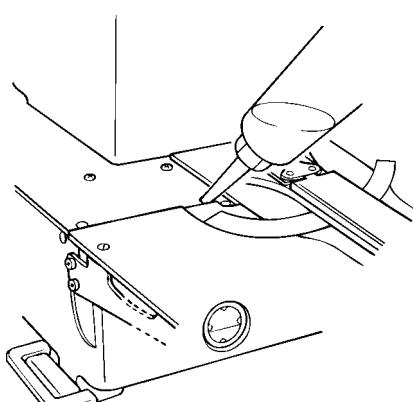
Note 4: Use only specified Brother oil (Nisseki Mitsubishi Sewing Lube 10N;VG10) for the machine oil.

#### 4-1. Lubrication points



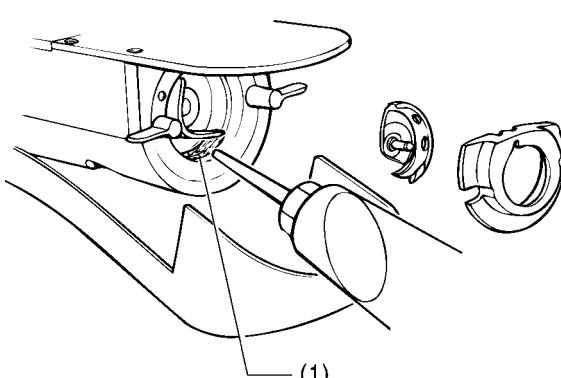
2685Q

- Fill the arm-side oil tank with oil.



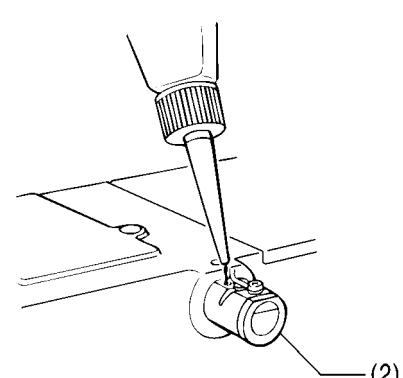
2686Q

- Fill the bed-side oil tank with oil



2512Q

- Add oil to the felt (1) of the shuttle race base.  
\* When setting up the sewing machine and when it hasn't been used for an extended period of time, be sure to add 2-3 drops oil to the felt.

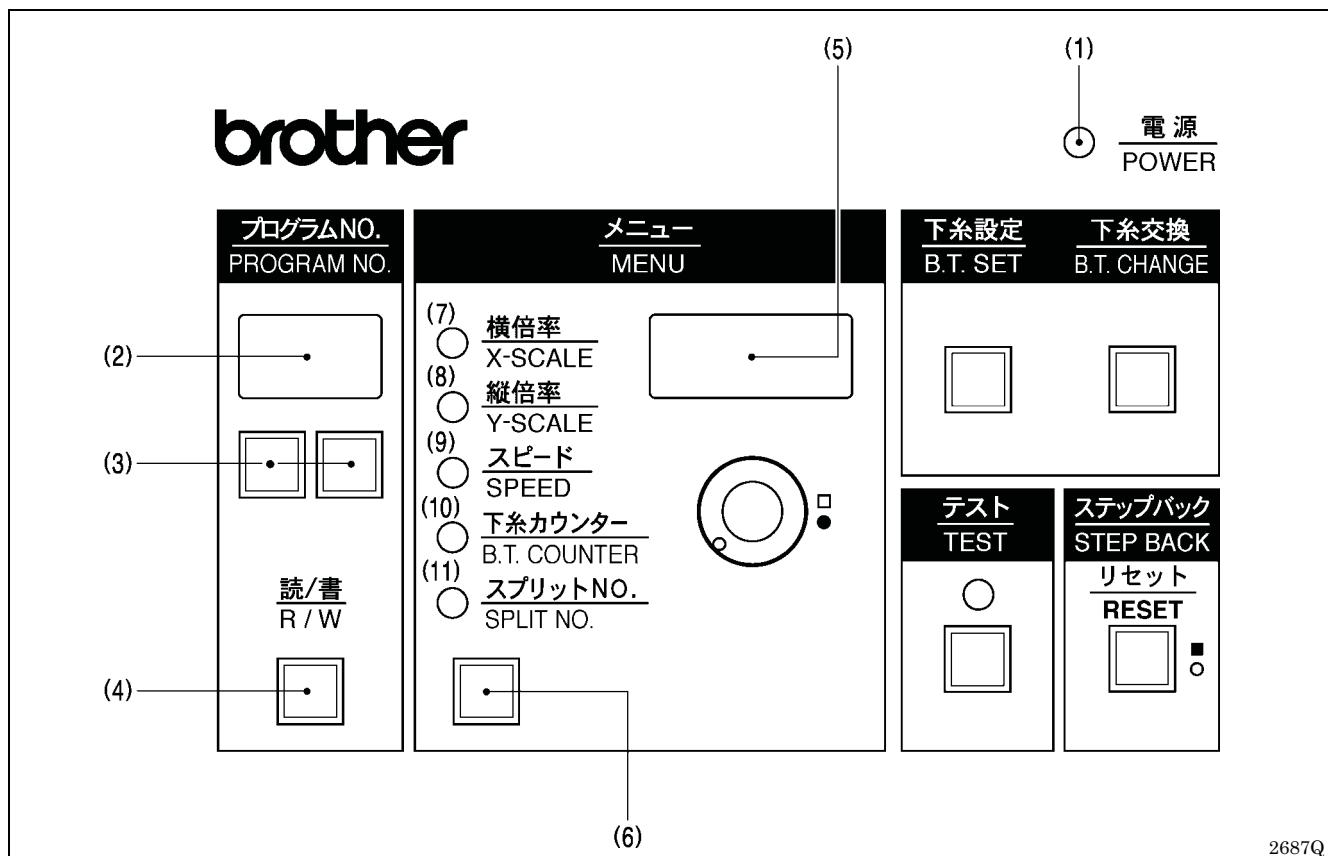


2513Q

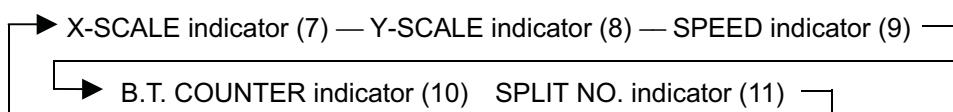
- If using the liquid cooling tank (2), fill it with silicon oil (100 mm<sup>2</sup>/s).

## 5. USING THE OPERATION PANEL

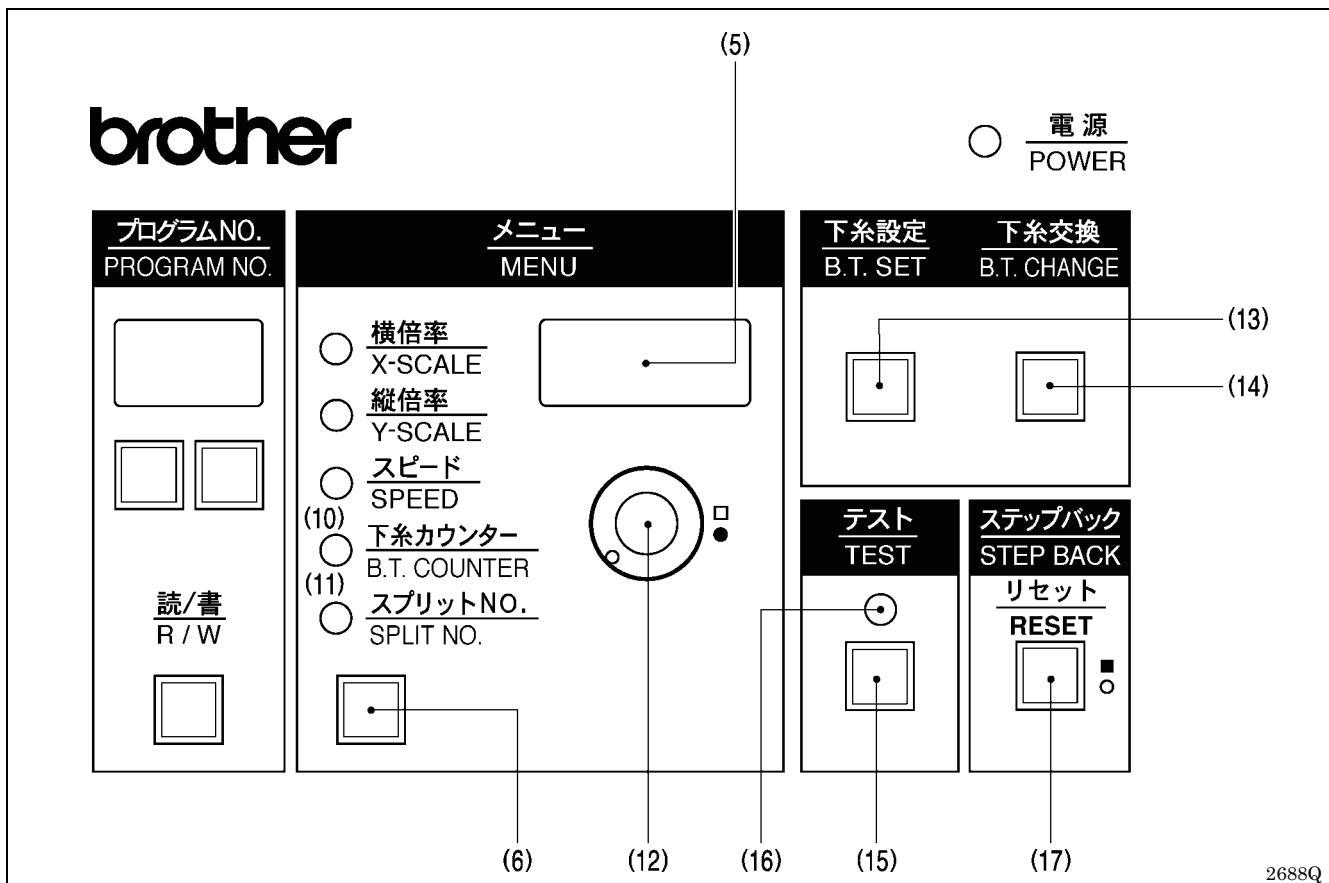
### 5-1. Explanation of panel



- (1) POWER indicator..... When the power is turned on, the indicator lights to show that the power is on.
- (2) PROGRAM No. display..... Displays the program number 00 - 99.
- (3) Program select switch..... Used to select the program number when reading a program from or writing a program to disk.
- (4) Program Read/Write switch ... Used to read a program from floppy disk, or to write a newly programmed stitch pattern to floppy disk.  
Up to ten patterns (00 - 99) can be stored on each disk.
- (5) Display screen ..... Used to display data such as menus, errors and memory switch settings.
- (6) Menu switch..... Used to select the desired menu ( scale, speed, bobbin thread counter, split No.). One of the indicators (7) - (11) illuminates to indicate the menu selected, and the setting for that menu then appears on the display screen (5).  
The illuminated indicator changes in the following order each time the switch is pressed.



- (7) X-SCALE indicator ..... Illuminates when X-scale mode has been selected using the menu switch (6).
- (8) Y-SCALE indicator ..... Illuminates when Y-scale mode has been selected using the menu switch (6).
- (9) SPEED indicator ..... Illuminates when speed mode has been selected using the menu switch (6).



2688Q

- (10) Bobbin Thread COUNTER..... Illuminates when bobbin thread counter mode has been selected using the menu switch indicator (6).
- (11) SPLIT NO. indicator..... Illuminates when split No. mode has been selected using the menu switch (6).
- (12) Dial ..... The setting shown on the display screen (5) can be changed by turning this dial while pressing the STEP BACK switch (17).
- (13) Bobbin Thread SET switch. .... Used to store the number of work pieces displayed in the bobbin thread counter to floppy disk.
- (14) Bobbin Thread CHANGE ..... Used to continue sewing after replacing the bobbin thread.  
(An alarm will sound when the counter reads <000>. Sewing is not possible when the counter reads <000>.) (Refer to "5-9. Using the bobbin thread counter".)
- (15) TEST switch..... Used to move the feed mechanism only in order to confirm a programmed stitch pattern.
- (16) TEST indicator..... Lights when the TEST switch is pressed.
- (17) STEP BACK switch..... Used when winding a fresh bobbin, or when correcting a stitch pattern due to a broken needle thread.  
Also used to reset error displays.

## 5. USING THE OPERATION PANEL

### 5-2. Using the floppy disk

#### Compatible types of floppy disk

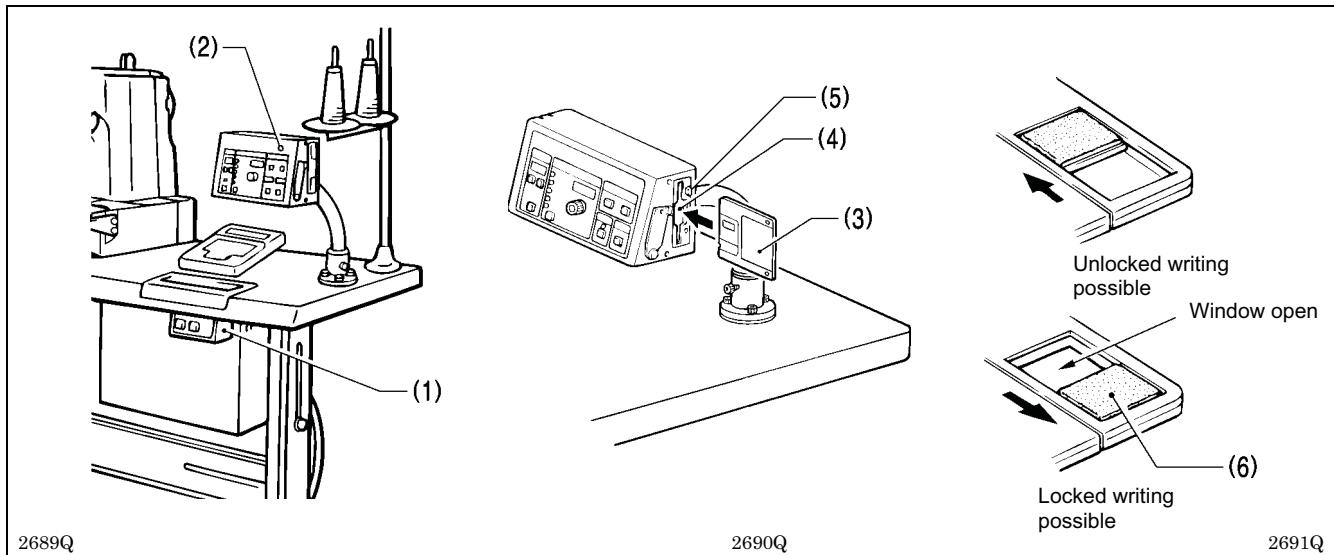
Data type	No. of stitches programmed	Data resolution	Disk	Format	Write enabled
BAS-300E data BAS-300F series KE-436B,436C	20,000 stitches per pattern 100 pattern Up to a maximum of 360,000 stitches	0.05 mm/pulse	2HD	1.44 MB	Yes
Tajima embroidery data	50,000 stitches per pattern	0.1 mm/pulse			No
Old BAS-300A data	4,000 stitches per pattern 10 patterns Up to a maximum of 40,000 stitches	0.1 mm/pulse	2DD	Automatically formatted	Yes
Old BAS-300 data	2,000 stitches per pattern 10 patterns Up to a maximum of 20,000 stitches	0.2 mm/pulse			No

- BAS-300E data can be used when sewing with the KE-436C, but the data resolution will be limited to 0.1 mm per pulse.
- The above four types of data can all be read, but when writing to disk, all data is automatically converted to BAS-300E data when writing to 2HD disks and BAS-300A data when writing to 2DD disks.
- When using a 2HD disk, use a disk which has been pre-formatted as a 1.44 MB disk. (The programmer can be used to format these disks. Refer to the programmer instruction manual for details.)
- TFD embroidery data can be embroidered after it has been converted by the programmer to BAS-300E data.
- Restrictions when using 2DD floppy disks and KE-436C data

In order to maintain compatibility with the old BAS-300A data, the following restrictions have been placed on the use of the new functions which have been added to the E series.

Restricted function	A series (2DD)	E, F series (2HD)	KE-436B, 436C (2HD)	Applicable command
Resolution	0.1 mm/pulse	0.05 mm/pulse	0.1 mm/pulse	
Low-speed conversion	2 types (400 and 1,200 revolutions)	4 types (400, 600, 800 and 1,200 revolutions)	4 types (400, 600, 800 and 1,200 revolutions)	[668] L [669] L
Split function during embroidering	Not available	Available	Available	[220] L [230] L
Needle down stop for split	Not available	Available	Available	[221] L [231] L
Expansion option output	Not available	Available	Not available	

## Setting the floppy disk



1. Turn on the power switch (1). The POWER indicator (2) will illuminate and the machine model number will appear on the display screen.
  2. Hold the disk (3) with the label up and the metal shutter to the front, and insert the disk into the drive (4). It will click into place.
  3. To eject the disk, press the eject button (5).

**Note:**

- Slide the write protector (6) on the back of the disk up (the window opens) to lock the disk and prevent accidental erasure of the disk contents.
  - Inserting the disk into the drive upside down or backwards may damage the drive and will prevent reading or writing of data.
  - Be sure to store your disks away from any magnets or magnetic sources, including radios, televisions, telephones, and other devices. Magnetism can erase or damage disk contents. Also, be careful to prevent exposure of the disk to oil or dust.
  - Be sure to make a copy of the floppy disk containing sewing data and keep the master floppy disk.
  - When the R /W operation is not in operation, eject the floppy disk from the floppy disk drive and keep it in a case for floppy disk only to prevent exposure of the disk to dust.
  - When the "E.4F" error (Reading error of sewing data) occurs very often;
    1. Clean the floppy disk drive using the cleaning disk.
    2. Read the sewing data. If the "E.4F" error occurs again, the floppy disk may be damaged. In this case, clean the floppy disk drive with the cleaning disk again.
    3. Read the sewing data from the master floppy disk and write it in a new floppy disk. Do not use any damaged floppy disks again.

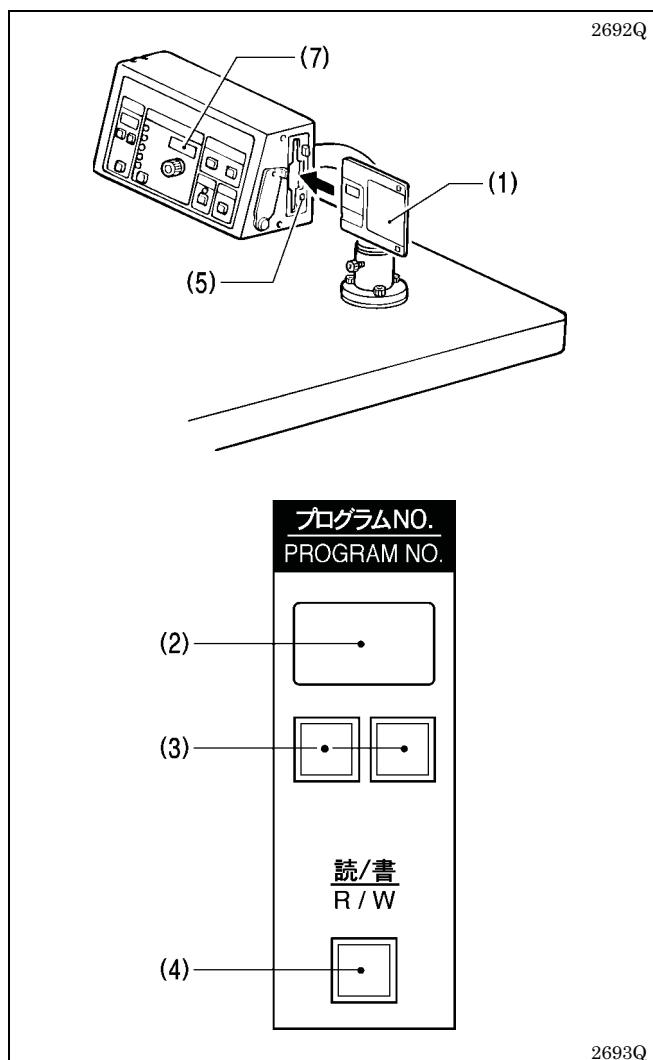
## How to use the cleaning disk

1. Insert the cleaning disk into the floppy disk drive.
  2. Select a program number (0-9), and press the "R / W" switch. If you select the same program number for cleaning every time, the same location of the cleaning disk is used and the lifetime of the cleaning disk will become short. Next time you clean it, select a different number.
  3. After the cleaning is completed, the "E.4F" error appears. The error appears because the cleaning disk has no data. This is normal.
  4. Cancel the error and eject the cleaning disk.

## 5. USING THE OPERATION PANEL

### 5-3. Using the program R/W (Read/Write) switch

Programmed stitch patterns stored on floppy disk can be read into memory, and newly programmed patterns can be written to disk for permanent storage and later recall.



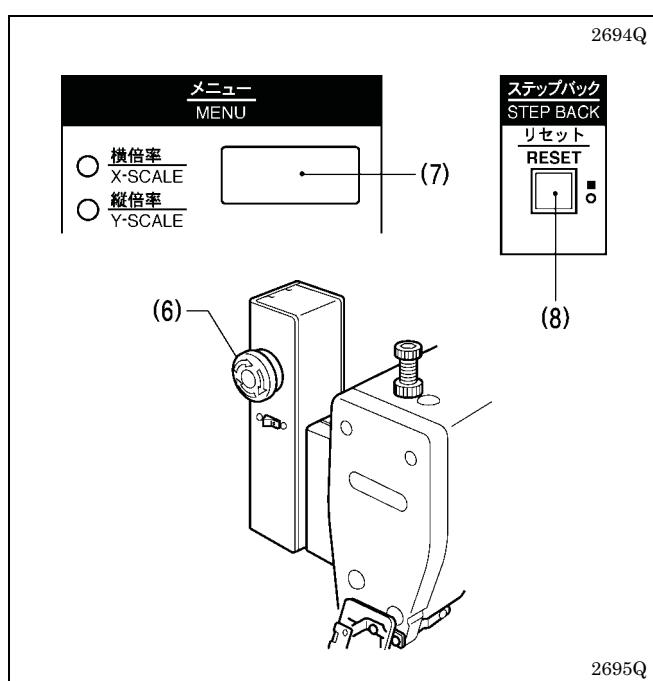
Insert the floppy disk (1) containing or which is to contain the programmed stitch pattern.

#### To READ a pattern to memory

Press the program select switch (3) on the operation panel. The program number will then appear in the PROGRAM NO. display (2). After selecting the desired program number, press the R/W switch (4). The disk drive indicator (5) will illuminate and a "P" will appear on the PROGRAM NO. display (2) to indicate that the data is being read. When the alarm sounds and the disk drive indicator (5) turns off, the program number will then flash in the PROGRAM NO. display (2) instead of the "P" to indicate that the reading of the data is complete.

#### To WRITE a pattern to disk

Press the program select switch (3) on the operation panel to select the desired program number. After programming the pattern using the stitch programmer, press the R/W switch (4). The disk drive indicator (5) will illuminate and a "P." will appear on the PROGRAM NO. display (2) to indicate that the data is being written. When the alarm sounds and the disk drive indicator (5) turns off, the program number will then flash in the PROGRAM NO. display (2) instead of the "P" to indicate that the writing of the data is complete.



#### If an error message is displayed

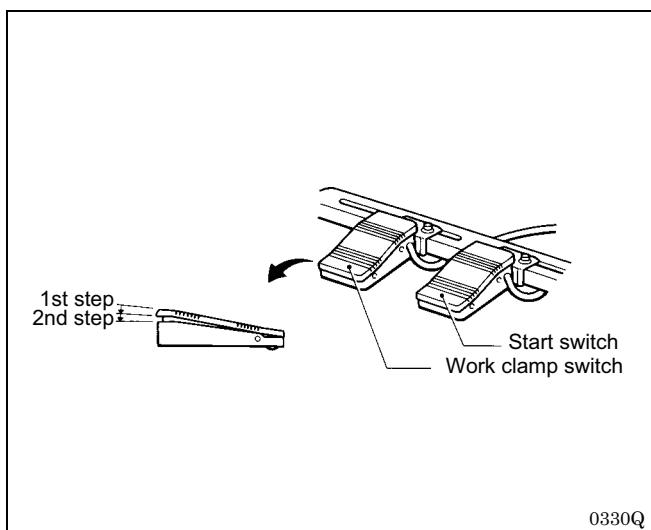
If an error message code is displayed in the display (7), and alarm will sound.

Press the emergency stop switch (6) on the front of the machine to stop sewing machine operation, and then refer to and follow the error code list on page 58 to 59.

#### Clearing the error

1. Turn the EMERGENCY STOP switch (6) clockwise and then pull it forward to release it.
2. Press the STEP BACK (RESET) switch (8) on the operation panel (when memory switch No. 0d is ON). If memory switch No. 0d is OFF, press the EMERGENCY STOP switch (6) once more to release it.

## 5-4. Operating the foot switch



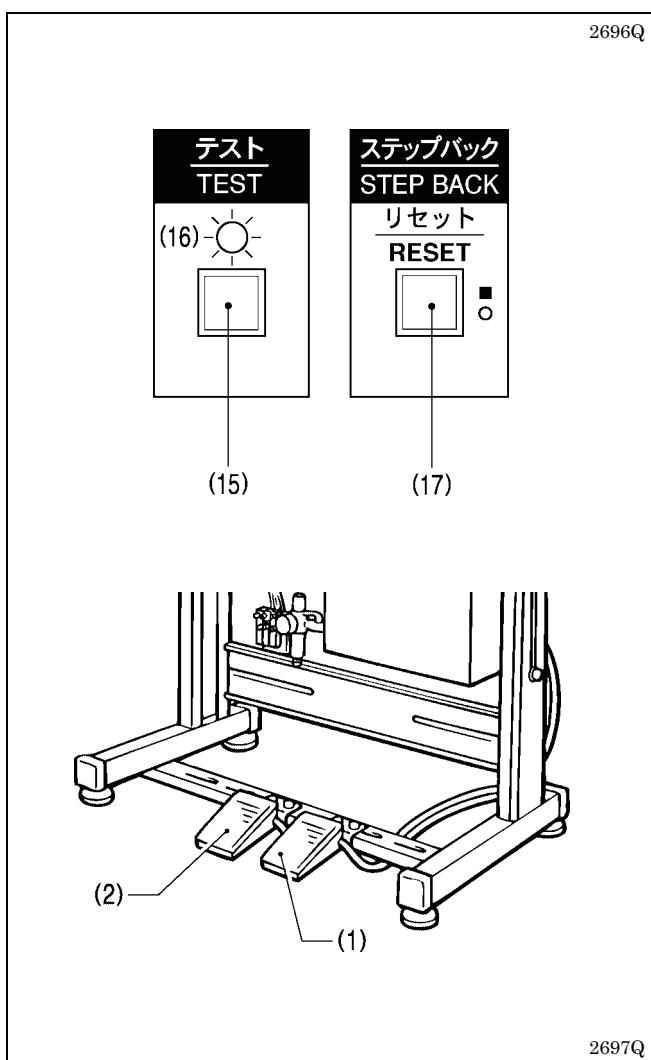
When the work clamp switch (left side) is depressed to step 1, the work clamp on one side is lowered, and when it is pressed to step 2, the work clamps on both sides are lowered.

\* The work clamp lowering pattern can be set to a variety of different patterns. (Refer to "12. SETTING THE WORK CLAMP MODE".)

When the start switch (right side) is depressed, sewing starts.

## 5-5. Using the TEST switch (Checking the sewing pattern)

Use the TEST switch to begin sewing again from any desired point when the thread breaks or the bobbin thread runs out.



1. Press the TEST switch (15). The test indicator (16) will light.
2. If the work clamp is raised, depress the work clamp switch (2) to lower the work clamp.
3. Press the start switch (1).

**Note:**

After the feed mechanism has returned to the home position, it will then move the sewing start position and the program number will stop flashing.

This only occurs the first time that a program is selected.

4. Press the start switch (1). (The needle will remain stationary as the work clamp advances through the pattern at low speed one stitch at a time. Press the work clamp switch (2) to fast forward.
  - If the STEP BACK switch (17) is pressed while moving at low speed when memory switch No.20 is ON, the work clamp will move in the forward direction in steps of 100 stitches.
5. When the work clamp reaches the desired position, press the TEST switch (15). The work clamp will stop, and the test indicator (16) will go out. If the work clamp was stopped too early, press the TEST switch (15) again to proceed.
  - If the work clamp was stopped too late, press the STEP BACK switch (17) to advance the work clamp one stitch at a time.

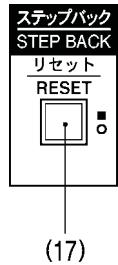
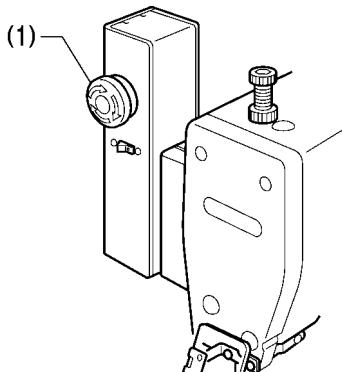
**Resuming operation from a stopping point**

6. Sewing will start when the start switch (1) is pressed.

## 5. USING THE OPERATION PANEL

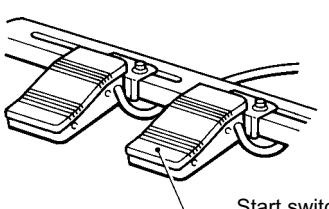
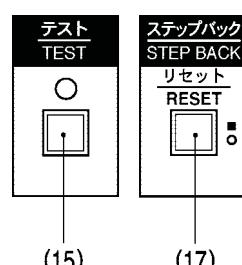
### 5-6. Using the emergency stop switch

Press the emergency stop switch to immediately stop the sewing machine during actual sewing or when in the test mode.



#### Clearing the error

1. Turn the EMERGENCY STOP switch (1) clockwise and then pull it forward to release it.
2. Press the STEP BACK (RESET) switch (17) on the operation panel.  
(The buzzer will stop sounding.)
3. If you do not wish to resume sewing, press the EMERGENCY STOP switch (1) once more to release it, and then press the STEP BACK (RESET) switch (17) so that the operation panel display flashes. The sewing machine will then be ready for the next sewing operation.  
\* If memory switch No. 0d is OFF, press the EMERGENCY STOP switch (1) once more to release it.

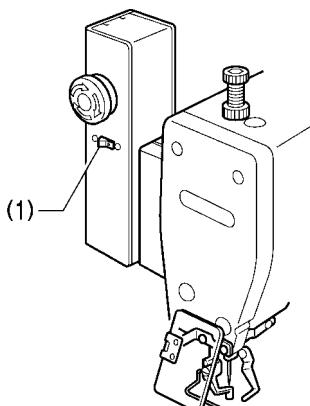


#### Continuing sewing from a stopping point

If you press the EMERGENCY STOP switch after the thread breaks or the bobbin thread runs out during sewing, you can then resume sewing from the point where the thread broke or ran out.

1. Press the EMERGENCY STOP switch to release it.
2. Press the STEP BACK (RESET) switch (17) to trim the thread.
3. Press the STEP BACK (RESET) switch (17) once more.  
(The sewing machine will move stitch by stitch in the reverse direction while this switch is pressed.)  
If the sewing machine moves back too far, press the TEST switch (15) to move it forward again. Press the TEST switch (15) again to stop the machine.
4. After you have reached the desired position, depress the start switch to start sewing.

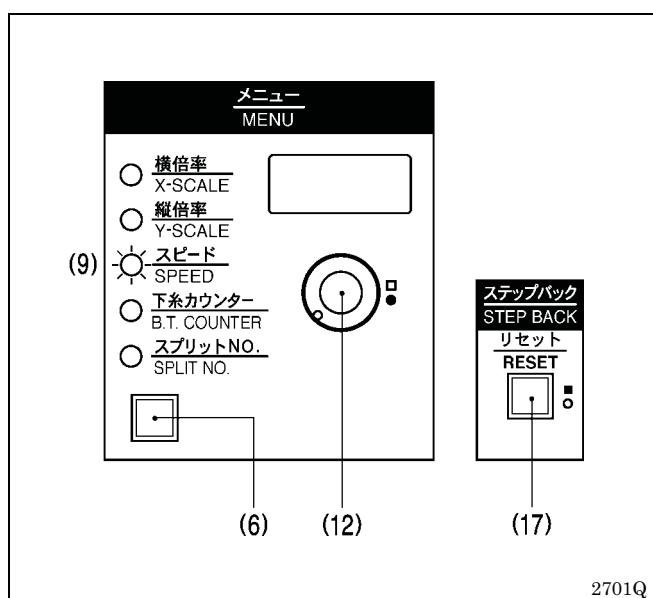
### 5-7. Using the thread wiper switch



The thread wiper can be turned on and off using the thread wiper switch (1).

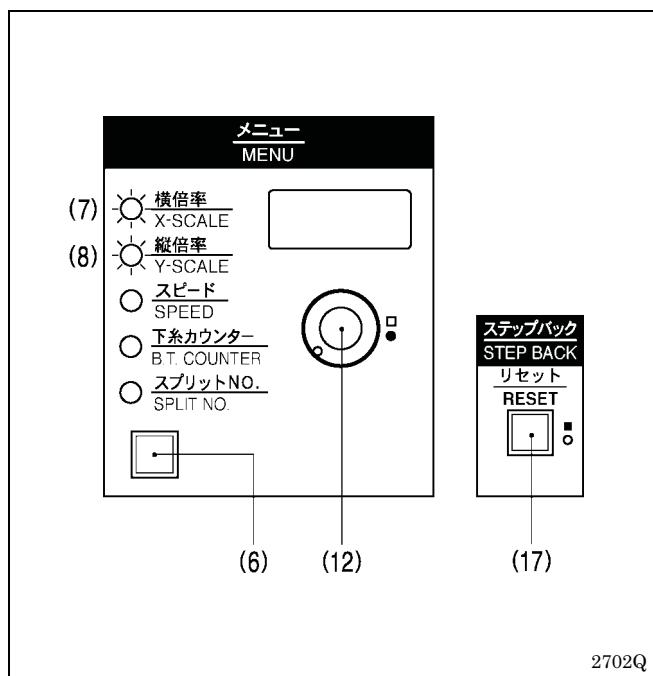
## 5-8. Adjusting the sewing SPEED control

The sewing speed can be changed in steps of 100 rpm to the appropriate speeds for each stitch length setting.



1. Press the MENU switch (6) until the SPEED indicator (9) illuminates.
2. While pressing the STEP BACK switch (17), turn the dial (12) until the desired speed is displayed.
  - The display will change in steps of 10 rpm.

## 5-9. Changing the X-SCALE and Y-SCALE settings

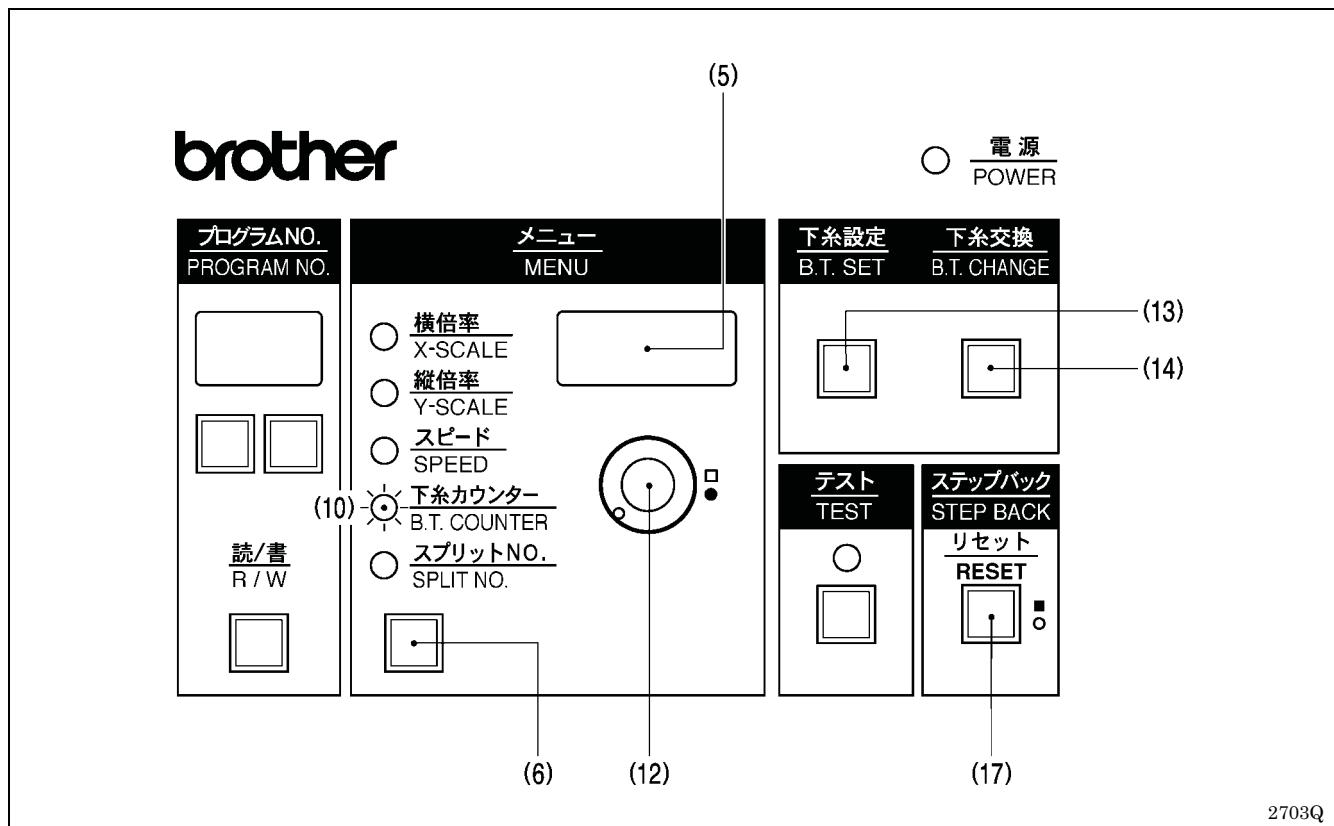


1. Press the MENU switch (6) until the X-SCALE indicator (7) or the Y-SCALE indicator (8) illuminates.
2. While pressing the STEP BACK switch (17), turn the dial (12) until the desired ratio flashes on the display.
  - The scale setting is displayed as a percentage.
3. The program number will flash, and after the home position is detected the flashing will stop.

## 5. USING THE OPERATION PANEL

### 5-10. Using the bobbin thread counter

Set the bobbin thread counter to display the number of pieces of the selected pattern which can be sewn with the amount of thread on the bobbin to avoid running out of bobbin thread in the middle of a pattern.

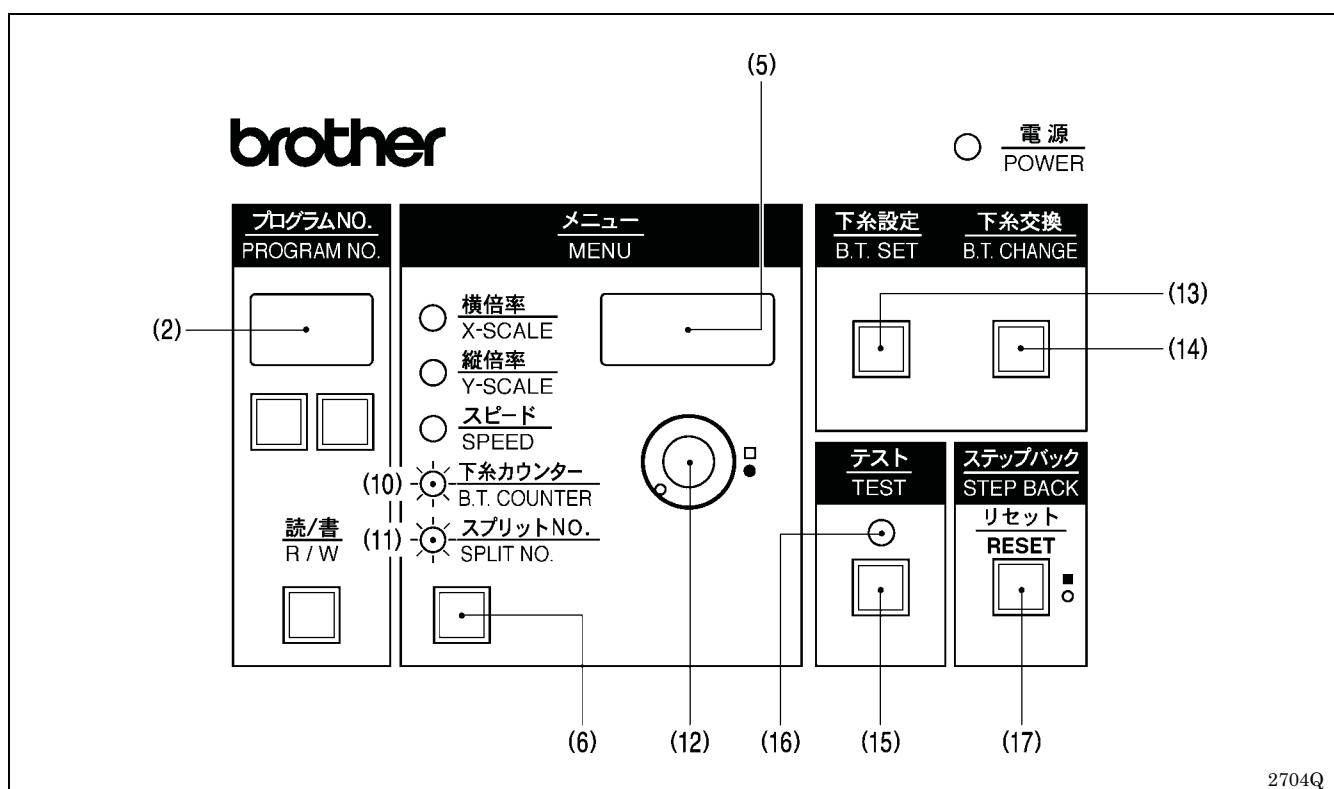


2703Q

1. Press the MENU switch (6) until the B.T. COUNTER indicator (10) illuminates.
  - The bobbin thread counter can be set to any number from <001> to <999>. If the counter is set to <000>, sewing continues irrespective of the amount of bobbin thread remaining.
2. While pressing the STEP BACK switch (17), turn the dial (12) to set the number of articles to be embroidered.
3. Insert the floppy disk and press the bobbin thread SET switch (13). An alarm will beep twice. This will record the number of work pieces shown in the counter (5) to the disk.
4. The number shown in the counter (5) will decrease one each time the stitch pattern is completed. When the number of patterns shown in the counter is sewn, the counter (5) will read <000>, and an alarm will sound.  
(The sewing machine will not start even if the start switch is pressed.)
5. Press the bobbin thread change switch (14) and replace the bobbin. The alarm will stop, and the number of work pieces set in step 3 will be displayed again in the counter (5).

## 5-11. Using production counter

Both PRO. NO. and B.T. COUNTER displays are available for the five-digit PRODUCTION counter.



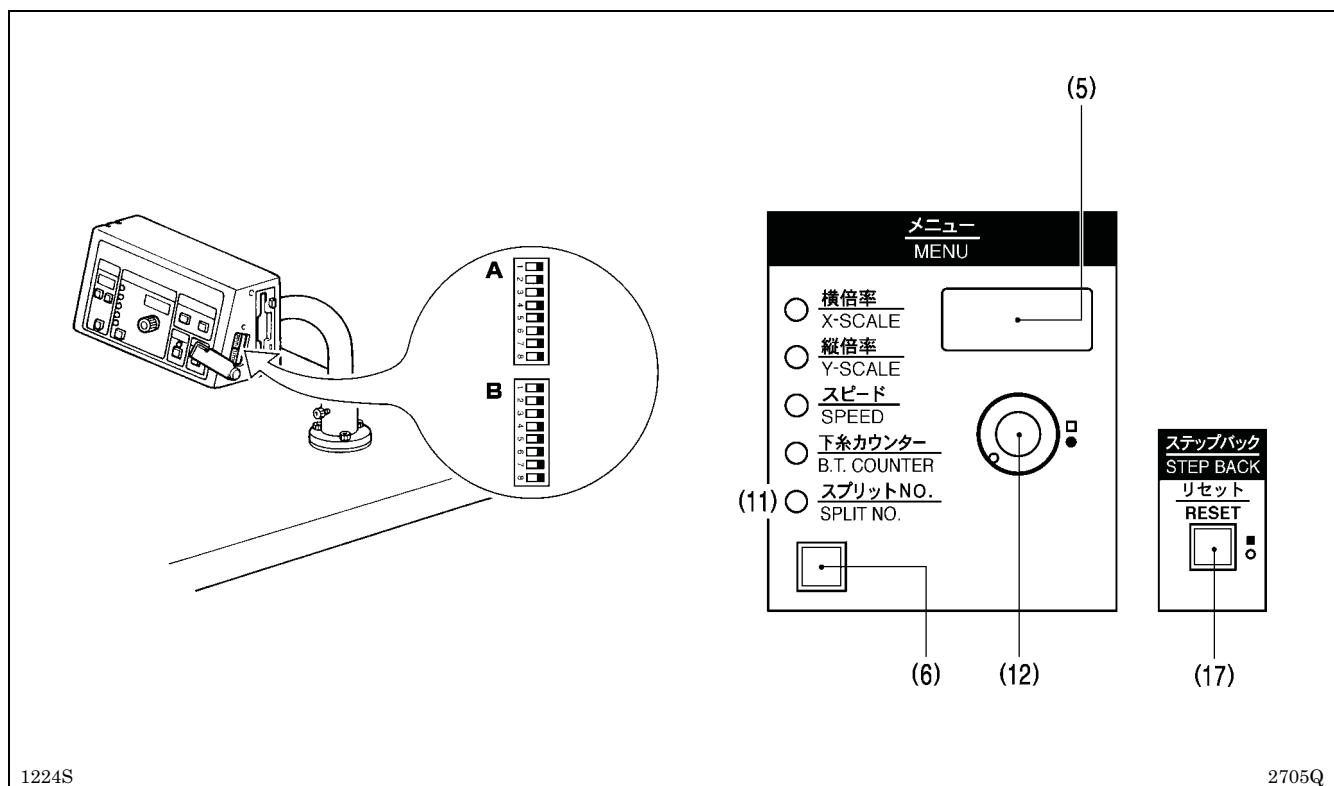
2704Q

1. While pressing the TEST switch (15), press the B.T.SET switch (13). The B.T. COUNTER indicator (10) and the SPLIT NO. indicator (11) will both illuminate, and the production counter value will appear on the program number display (2) and on the display screen (5).
  - Press the B.T. CHANGE switch (14). The PRODUCTION counter will display <00000>.
  - The production counter can be set to a value between <00000> and <99999> by turning the dial (12) while pressing the STEP BACK switch (17).
2. Depress the start switch to start embroidering.
3. Press the TEST switch (15) or the MENU switch (6). The TEST indicator (16) will switch off and the contents of each display screen will return to the normal display.

## 5. USING THE OPERATION PANEL

### 5-12. Using single split mode

By using single split mode, it is possible to change up to 100 patterns immediately.



1224S

2705Q

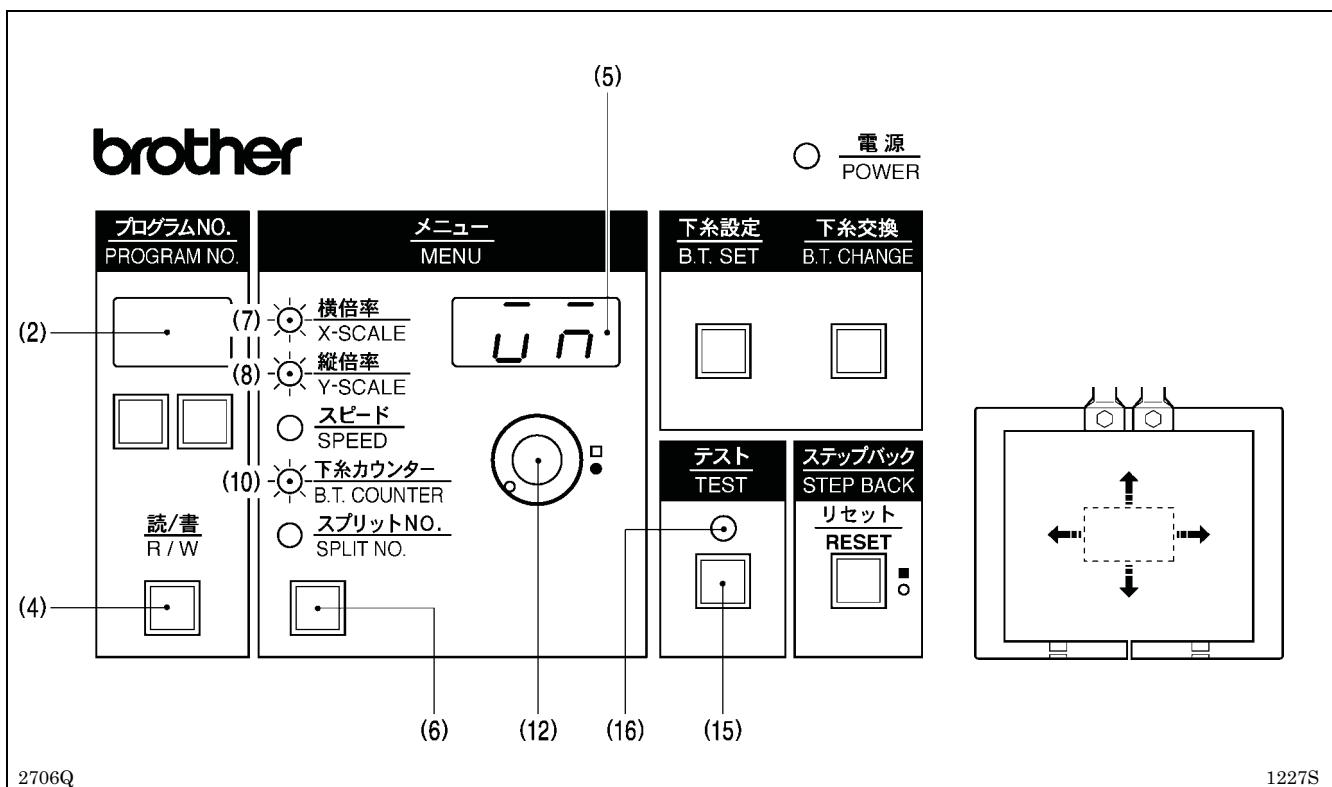
1. Move DIP switch B No. 1 to the ON position. This will activate single split mode.  
(Refer to "10. DIP SWITCH".)
2. Turn on the power read in the patterns which have been programmed for split sewing.
3. Press the MENU switch (6) until the SPLIT NO. indicator (11) is illuminated. "1" will then appear in the display screen (5). Then, while pressing the STEP BACK switch (17), turn the dial (12) to change the contents appearing on the display screen (5) in order.  
(Example) If three patterns have been programmed for split sewing, the number on the display screen changes in the following order: "1" → "2" → "3" → "1" → "2" ...
4. When the start switch is pressed, only the pattern displayed on the display screen (5) will be sewn.

**Note:**

As to split sewing, refer to the instruction manual of the "electronic programmable pattern tacker programmer"

### 5-13. Shifting a stitch pattern

- Programs which have already been programmed can be moved up, down and to the left and right.  
(However, such patterns will be reset if the power supply is turned off or the program number is changed.)
- The feed position can be set to the any position desired.



2706Q

1227S

- After the program data has been read, depress the start switch to move the feed mechanism to the sewing start position. If you carry out the following procedure while the program number display (2) is flashing (if the start switch has not been depressed) → The feed position can be set to any position, but it will not be possible to move the stitch pattern.
- Press the MENU switch (6) until the B.T. COUNTER indicator (10) illuminates.
- Press and hold the TEST switch (15) and press the R/W switch (4). The test indicator (16) will light, and <  $\square \square$  > will appear in the counter (5).
- Press the MENU switch (6) so that either the X-SCALE indicator (7) or Y-SCALE indicator (8) illuminates.
- Turn the setting dial (12) to move the feed mechanism one pulse at a time.
  - If the setting dial is turned counterclockwise while the X-SCALE indicator is illuminated, the feed mechanism will move to the right.
  - If the setting dial is turned clockwise while the X-SCALE indicator is illuminated, the feed mechanism will move to the left.
  - If the setting dial is turned counterclockwise while the Y-SCALE indicator is illuminated, the feed mechanism will move up.
  - If the setting dial is turned clockwise while the Y-SCALE indicator is illuminated, the feed mechanism will move down.
- When the TEST switch (15) is pressed after the above fine adjustments have been made, the TEST indicator (16) and display window (5) will both switch off and movement of the stitch pattern will be completed.

**Note:**

When moving the stitch pattern, the sewing start position can be moved to any desired point within the sewing area, but if the pattern goes outside the sewing area, an error will occur during sewing and you will not be able to sew the pattern. Give consideration to the pattern as a whole when moving it.

## 6. CORRECT USE

# 6. CORRECT USE

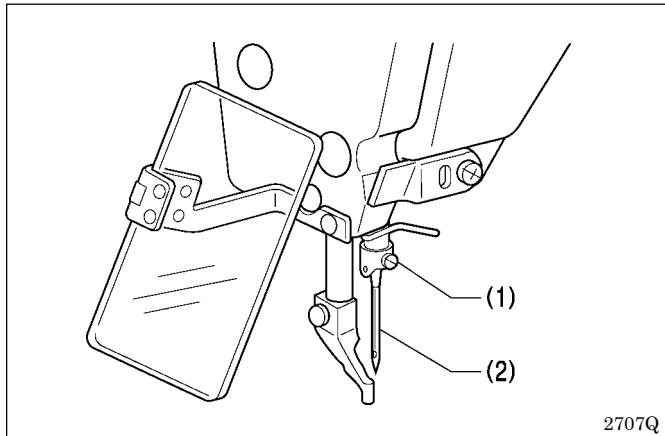
## 6-1. Selecting the needle and thread

Different needles and threads are used for different sewing applications.

Refer to the table at right for details on which needle and thread to select.

Needle	Thread	Main application
DP x 5 #14	#80 - #50	Medium materials
DP x 17NY #19	#50 - #20	Heavy materials

## 6-2. Installing the needle



### CAUTION



Turn off the power switch before installing the needle, otherwise the machine may operate if the foot switch is depressed by mistake, which could result in injury.

Loosen the set screw (1), insert the needle (2) as far as it will go so that the groove is facing toward you, and then tighten the set screw (1).

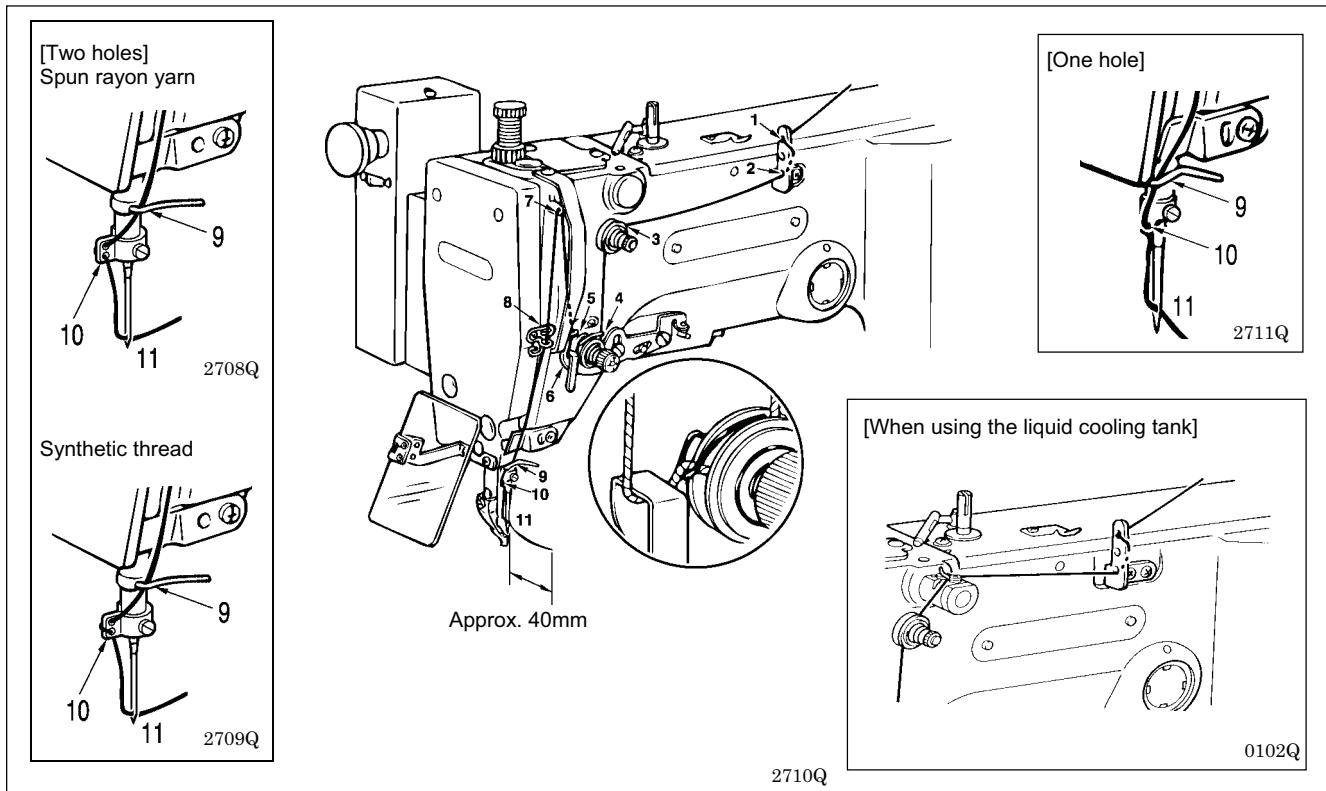
## 6-3. Threading the upper thread

### CAUTION



Turn off the power switch before threading the thread, otherwise the machine may operate if the foot switch is depressed by mistake, which could result in injury.

Thread the upper thread correctly as shown in the illustration below.



## 6-4. Winding the lower thread

### CAUTION

 Do not touch any of the moving parts or press any objects against the machine while winding the lower thread, as this may result in personal injury or damage to the machine.

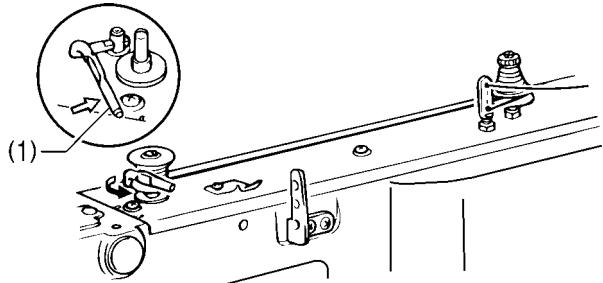
1. Place the bobbin all the way onto the shaft.



2. Thread the thread as shown in the illustration at right, wind the thread around the bobbin several times in the direction of the arrow, and then press the bobbin presser (1).

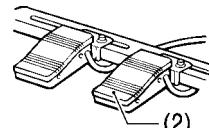


3. Turn on the power switch.  
(The POWER indicator on the operation panel will illuminate.)



2527Q

4. Depress the start switch (2) to move the feed mechanism to the sewing start.



2712Q



5. Check that the needle is not touching the presser foot, and then while pressing the STEP BACK switch (3), depress the start switch (2) to start the machine. Keep depressing the start switch (2) until the lower thread stops being wound onto the bobbin.

Release the STEP BACK switch (3) after the machine starts operating. If you release the start switch before winding is completed, depress it once more while pressing and holding the STEP BACK switch (3).



(3)

2713Q



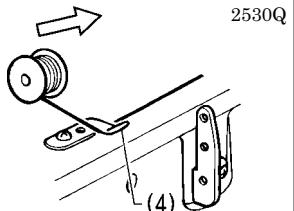
6. The bobbin presser (1) will automatically return to its original position after a set amount of thread (80 - 90% of the bobbin capacity) has been wound on.



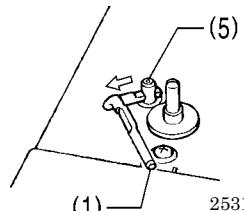
7. Release the foot switch (2).



8. Remove the bobbin, hook the thread onto the knife (4), and then pull the bobbin in the direction of the arrow to cut the thread.



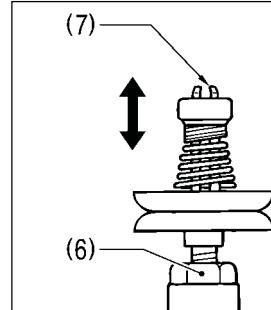
9. To wind more thread onto the bobbin, loosen the set screw (5) and pull the bobbin presser (1) outward.



2531Q

<<If the thread winds onto the bobbin unevenly>>  
If the thread winds onto the bobbin unevenly, loosen the nut (6) and turn the bobbin winder thread tension stud (7) to adjust.

\* If the thread winds on as shown in A, turn the bobbin winder thread tension stud (7) clockwise; if it winds on as shown in B, turn the bobbin winder thread tension stud (7) counterclockwise.



Case A

Case B

2532Q

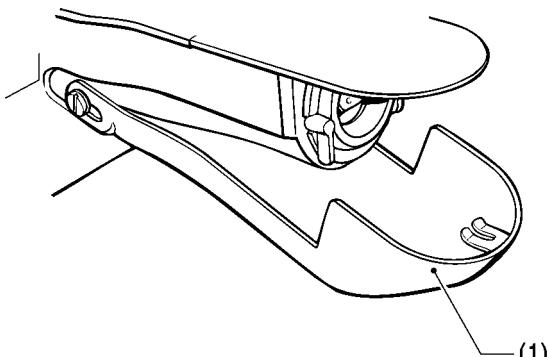
## 6. CORRECT USE

### 6-5. Replacing the bobbin case and threading the thread

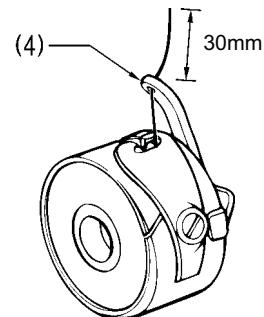
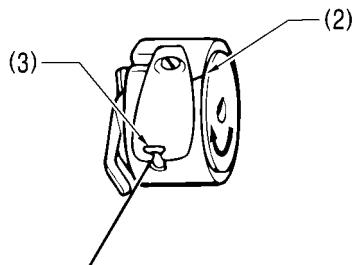
#### CAUTION

 Turn off the power switch before removing or inserting the bobbin case, otherwise the machine may operate if the foot switch is depressed by mistake, which could result in injury.

2610Q



2534Q



2535Q

1. Pull the shuttle race cover (1) toward you to open it.
2. Insert a new bobbin into the bobbin case, and then pass the thread through the slot (2) and pull it out from the thread hole (3). Check that the bobbin turns in the direction of the arrow when the thread is pulled at this time.
3. Pass the thread through the lever thread hole (4), and then pull out approximately 30 mm of thread.

### 6-6. Thread tension

#### 6-6-1. Sewing conditions and thread tension

Use	Medium materials		Heavy materials	
	Standard hook	Large hook	Standard hook	Large hook
Upper thread	#50 or equivalent	←	#30 or equivalent	←
Lower thread	#60 or equivalent	←	#50 or equivalent	←
Upper thread tension (N)	0.6 - 0.9	1.0 - 1.3	1.2 - 1.6	1.4 - 1.8
Lower thread tension (N)	0.2 - 0.3	←	0.2 - 0.3	←
Thread take-up spring height (mm)	9 - 11	←	9 - 11	←
Thread take-up spring tension (N)	0.15 - 0.35	←	0.4 - 0.6	←
Pre-tension (N)	0.1 - 0.3	←	0.3 - 0.5	←
Needle	DP × 5 #14	←	DP × 17NY #19	←

The sewing conditions given in the above table may need to be changed depending on the article being sewn.

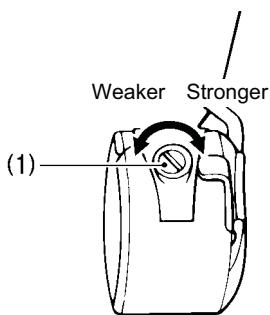
**6-6-2. Guide to maximum sewing speed**

Use	Max. sewing speed (rpm)	
	Standard hook	Large hook
8 layers of denim	2,500	2,500
12 layers of denim	2,300	
Ordinary materials	2,500	2,500

**Note:**

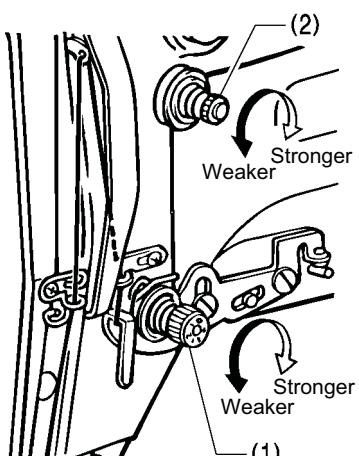
The thread may break due to heat under some sewing conditions.

If this happens, reduce the sewing speed, or use the liquid cooling tank (option).

**6-6-3. Lower thread tension**

2536Q

Adjust the thread tension to the weakest possible tension by turning the thread tension nut (1) until the bobbin case will not drop by its own weight while the thread end coming out of the bobbin case is held.

**6-6-4. Upper thread tension**

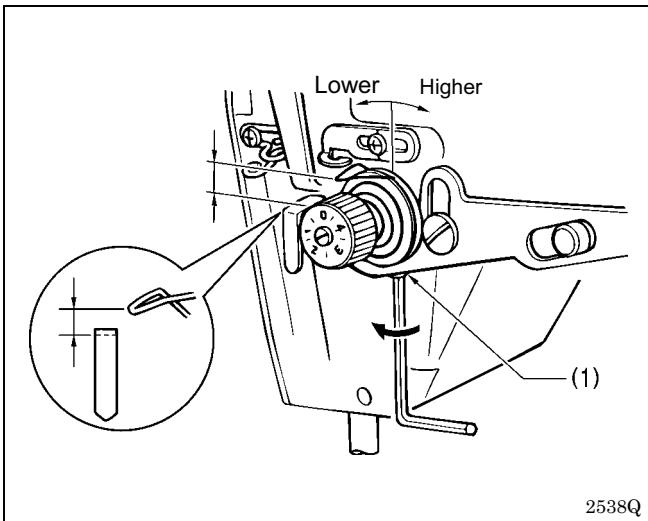
2714Q

Turn the tension nut (1) (main tension) to adjust the tension as appropriate for the material being sewn.

Furthermore, turn the thread nut (2) (sub-tension) to adjust the remaining length of upper thread to 35 - 40 mm, when the thread take-up lever is not used.

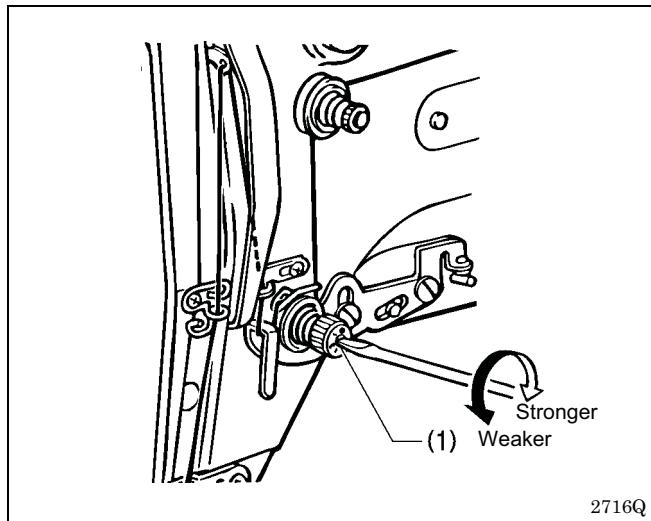
## 6. CORRECT USE

### 6-6-5. Thread take-up spring height



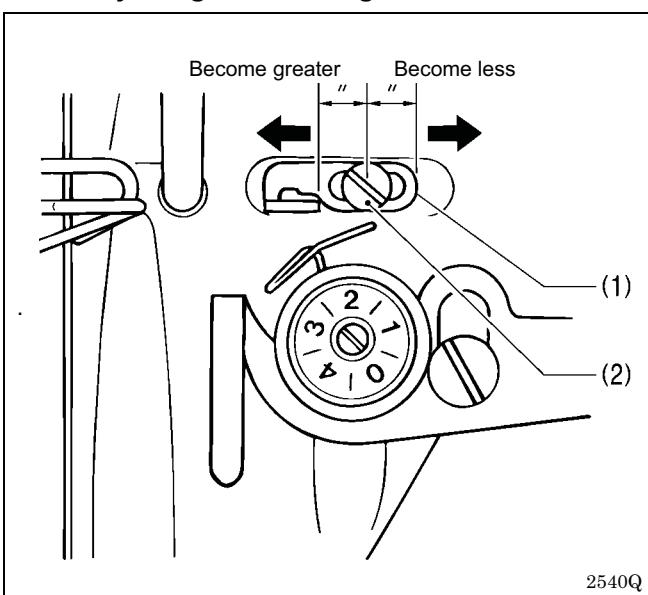
Loosen the set screw (1) and turn the tensioner body to adjust the thread take-up spring height.

### 6-6-6. Thread take-up spring tension



Turn the tension stud (1) with a screwdriver.

### 6-6-7. Adjusting arm thread guide R



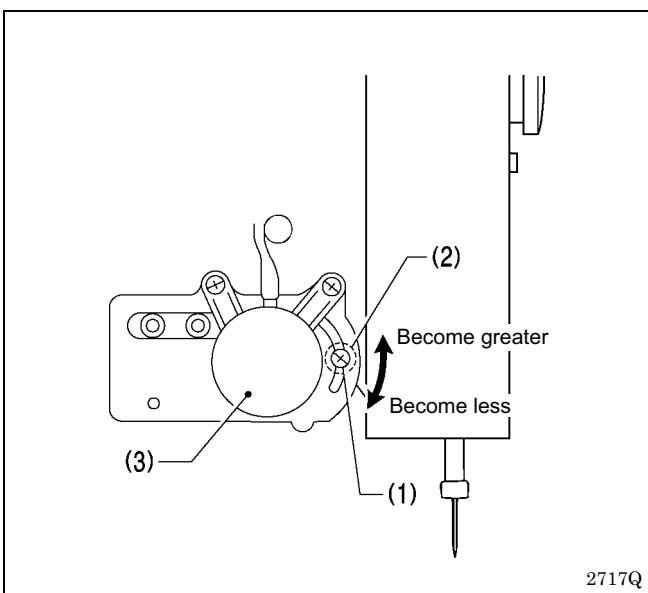
The standard position of arm thread guide R (1) is the position where the screw (2) is in the center of the adjustable range for arm thread guide R (1).

To adjust the position, loosen the screw (2) and then move arm thread guide R (1).

\* When sewing thick material, move arm thread guide R (1) to the left. (The thread take-up amount will become greater.)

\* When sewing thin material, move arm thread guide R (1) to the right. (The thread take-up amount will become less.)

### 6-6-8. Thread take-up amount



Loosen the screw (1) and move the stopper (3.57 nut) (2) to adjust the operating angle of the thread take-up solenoid (3).

\* To reduce the thread take-up amount, move the stopper (2) downward.

\* To increase the thread take-up amount, move the stopper (2) upward.

## 7. SEWING

### ⚠ CAUTION

 Turn off the power switch at the following times, otherwise the machine may operate if the foot switch is depressed by mistake, which could result in injury.

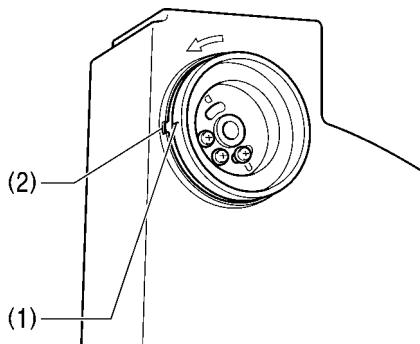
- When threading the needle
- When replacing the needle and bobbin
- When not using the machine and when leaving the machine unattended

 Do not touch any of the moving parts or press any objects against the machine while sewing, as this may result in personal injury or damage to the machine.

#### Note:

At the time of shipment from the factory, this sewing machine is set to not detect needle up errors. If you would like needle up errors to be detected, set memory switch No. 14 to ON.

### 7-1. Before starting sewing....

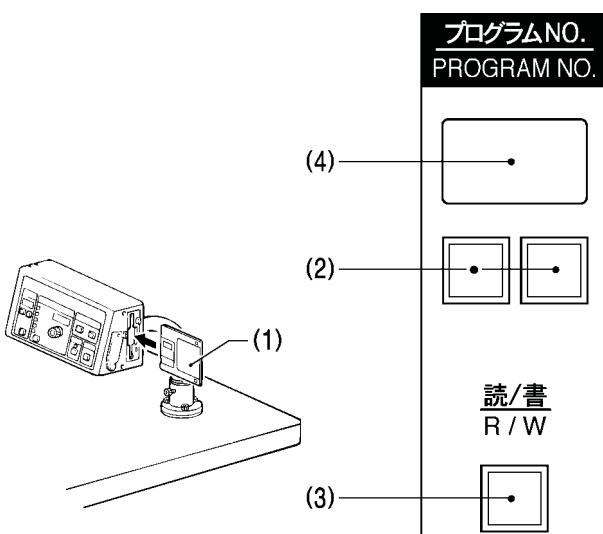


2462Q

Check that the needle bar is at its highest position. Turn the machine pulley so that the index mark (1) on the pulley is between the marks (2) on the belt cover.

- \* If the machine is started while the index mark (1) is not between these two marks (2), error message "E.22" will be displayed.  
(only when memory switch No.14 is on)

### 7-2. Sewing operation

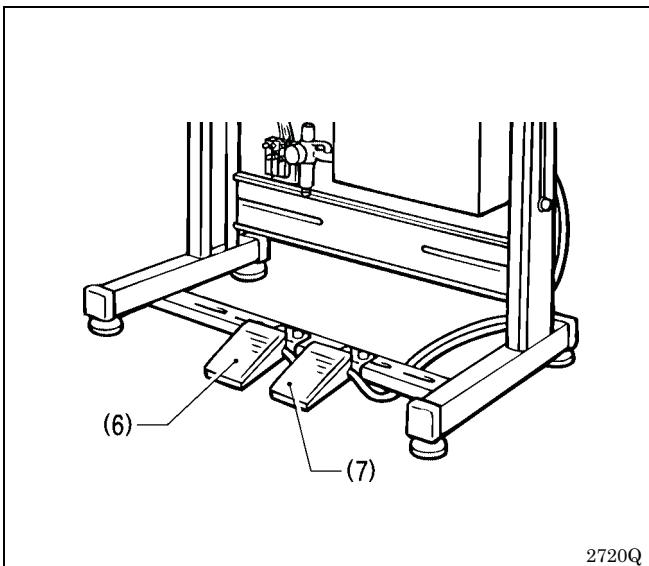


2718Q

2719Q

1. Turn the power switch on.  
(The power indicator on the operation panel will light.)
2. Insert the floppy disk (1).
3. Press the PRO. No. selection switch (2) to select the desired program number.
4. Press R/W switch (3).
  - The floppy disk drive indicator will light and the program no. display (4) will show a "P" while the data is being read. When reading is completed, an alarm will sound and the indicator will go out, then the program no. display (4) will blink the program number.

## 7. SEWING



2720Q

5. Step on the work clamp switch (6) to raise the work clamp.
6. Insert the work piece under the work clamp, and press the work clamp switch (6) to lower the clamp.
7. Press the start switch (7).

**Note:**

The work clamp will return to the origin, and will then advance to the sewing start position and blinking will stop. This is only required the first time a program is sewing.

8. Press the start switch (7) again to start sewing.
9. After sewing is completed, the thread cutter will automatically operate, then the work clamp will rise.

**Note:**

When the power is turned on after once being turned off, the same pattern of sewing can be continued since the machine will stores the sewing data from the last time.

## 8. MAINTENANCE AND INSPECTION

### **CAUTION**



Turn off the power switch before carrying out cleaning, otherwise the machine may operate if the foot switch is depressed by mistake, which could result in injury.



Be sure to wear protective goggles and gloves when handling the lubricating oil and grease, so that they do not get into your eyes or onto your skin, otherwise inflammation can result.

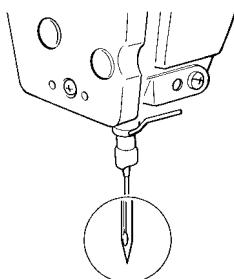
Furthermore, do not drink the oil or eat the grease under any circumstances, as they can cause vomiting and diarrhoea. Keep the oil out of the reach of children.



Wait until the motor has cooled down before cleaning the air holes.

The motor may be hot immediately after it has been used, and it may cause burns if touched.

### 8-1. Checking the needle

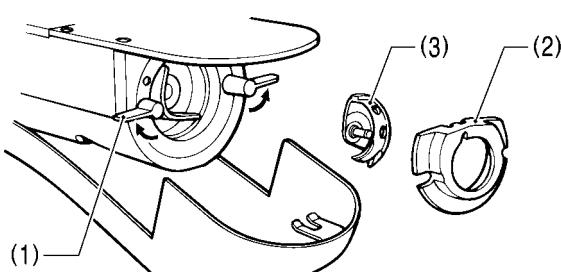
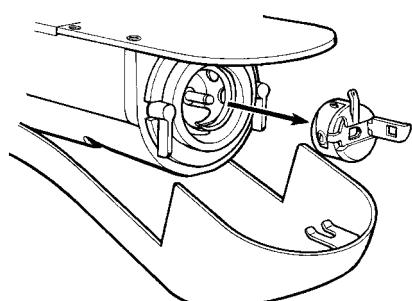


1236S

Always check that the tip of the needle is not broken and also the needle is not bent before starting sewing.

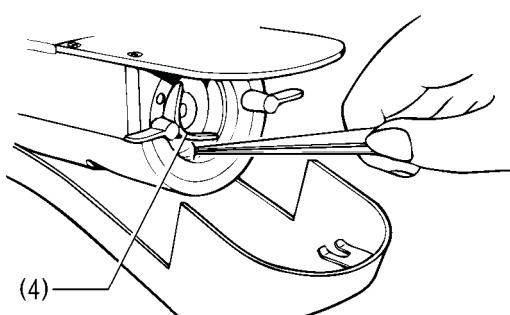
### 8-2. Cleaning the rotary hook

0122Q



1. Pull the shuttle race cover toward you to open it, and then remove the bobbin case.

2548Q



2549Q

2. Open the setting claw (1) in the direction indicated by the arrow, and then remove the shuttle race body (2) and the shuttle hook (3).

3. Clean all the dust and thread ends from around the driver (4), the top of the rotary hook thread guide and the shuttle race.

## 8. MAINTENANCE AND INSPECTION

### 8-3. Lubrication

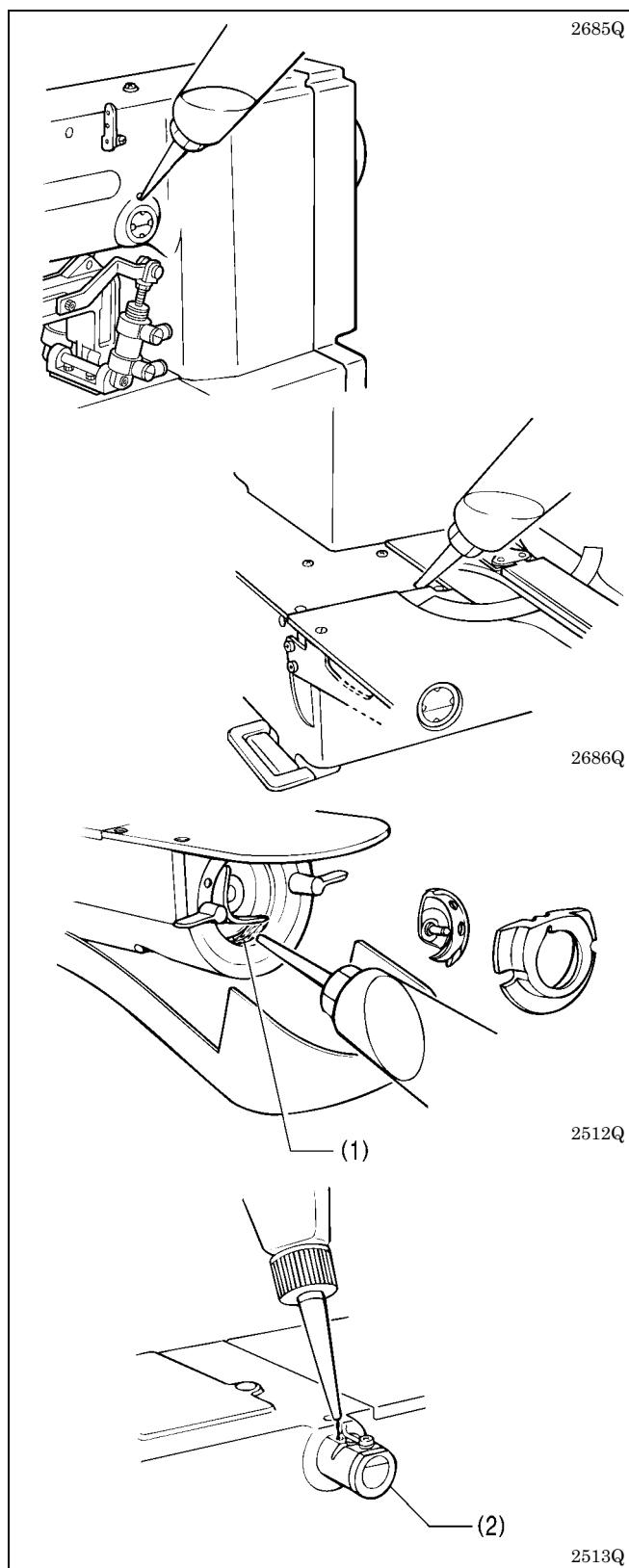
Note 1: Fill the machine with oil when the oil level is down to about one-third full in the oil sight glass.

If oil is not added and the oil drops below this level, there is the danger that the machine may seize during operation.

Note 2: Be sure to let the machine operate for a while after adding the oil.

Note 3: If there is no more oil on the felt of the shuttle race base, problems with sewing may result, so add oil to the felt until it is slightly soaked.

Note 4: Use only specified Brother oil (Nisseki Mitsubishi Sewing Lube 10N;VG10) for the machine oil.



1. Fill the arm-side oil tank with oil.

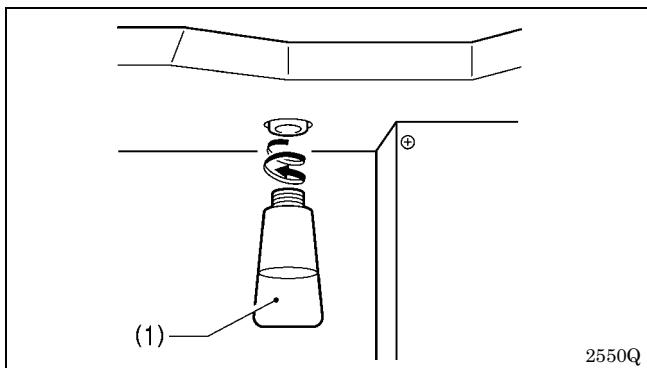
2. Fill the bed-side oil tank with oil.

3. Add oil to the felt (1) of the shuttle race base.

\* When setting up the sewing machine and when it hasn't been used for an extended period of time, be sure to add 2-3 drops oil to the felt.

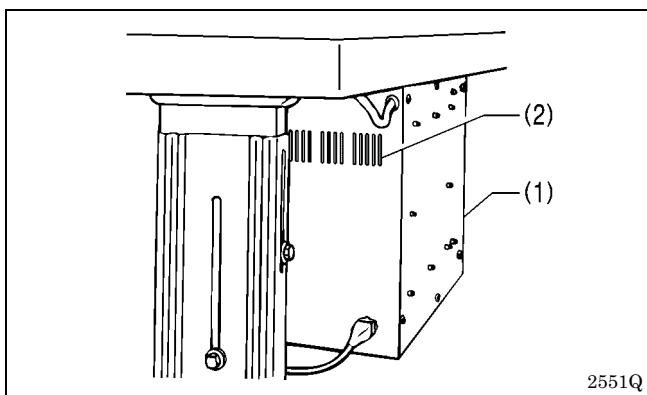
4. If using the liquid cooling tank (2), fill it with silicon oil (100 mm<sup>2</sup>/s).

## 8-4. Draining the oil



1. Remove and empty the waste oil container (1) whenever it is full.
2. After emptying the waste oil container (1), screw it back into its original position.

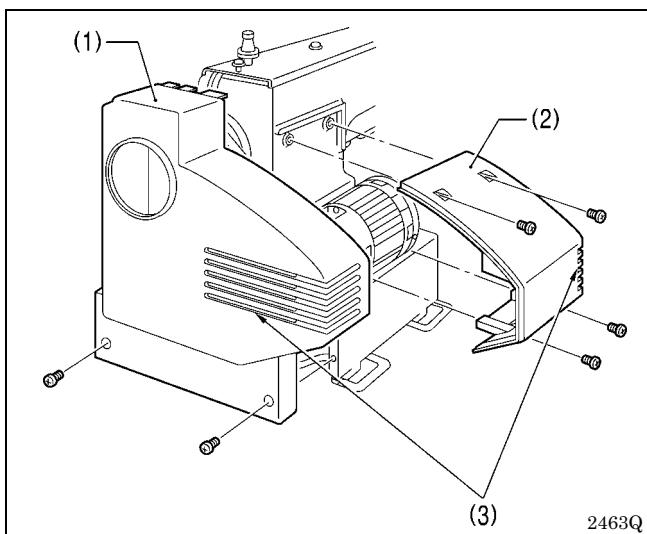
## 8-5. Cleaning the control box air inlet port



Use a vacuum cleaner to clean the filter in the air inlet port (2) of the control box (1) at least once a month.

- \* If the machine is used while the air inlet port is blocked, the inside of the control box will overheat. When this happens, the overheating error code "E-d0" will be displayed and you will not be able to operate the sewing machine.

## 8-6. Cleaning the air holes of belt cover and frame side cover

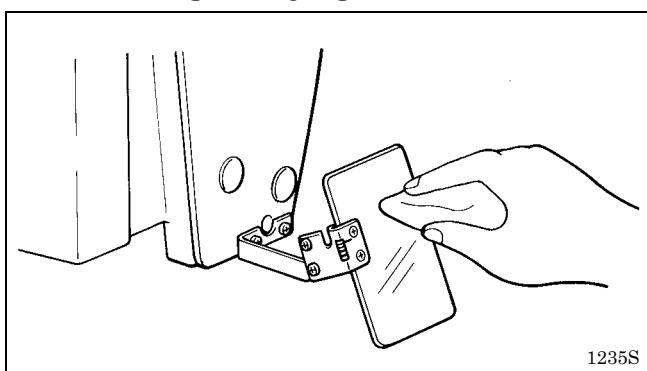


Remove the belt cover (1) and the frame side cover (2), and then clean the air holes (3).

After cleaning, install the belt cover (1) and the frame side cover (2).

- \* If dust collects in the air holes, it may cause the motor to overheat. The air holes should be cleaned at regular intervals.  
In addition, be careful not to let any foreign matter get into the air holes.

## 8-7. Cleaning the eye guard



Wipe the eye guard clean with a soft cloth.

**Note:**

Do not use solvents such as kerosene or thinner to clean the eye guard.

## 9. STANDARD ADJUSTMENTS

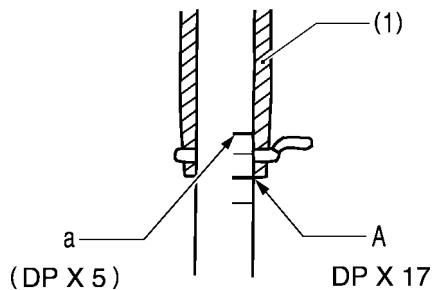
### 9. STANDARD ADJUSTMENTS

#### ⚠ CAUTION

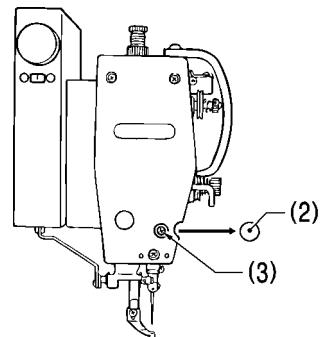
-  Maintenance and inspection of the sewing machine should only be carried out by a qualified technician.
-  Ask your Brother dealer or a qualified electrician to carry out any maintenance and inspection of the electrical system.
-  Turn off the power switch and disconnect the power cord from the wall outlet at the following times, otherwise the machine may operate if the foot switch is depressed by mistake, which could result in injury.
  - When carrying out inspection, adjustment and maintenance
  - When replacing consumable parts such as the rotary hook and knife
-  Hold the machine head with both hands when tilting it back or returning it to its original position. Furthermore, after tilting back the machine head, do not push the face plate side or the pulley side from above, as this could cause the machine head to topple over, which may result in personal injury or damage to the machine.
-  If the power switch and air need to be left on when carrying out some adjustment, be extremely careful to observe all safety precautions.
-  If any safety devices have been removed, be absolutely sure to re-install them to their original positions and check that they operate correctly before using the machine.

#### 9-1. Adjusting the needle bar height

2552Q



2721Q

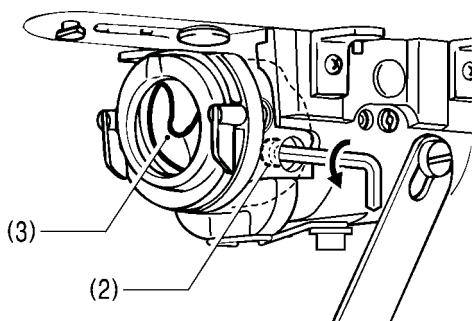
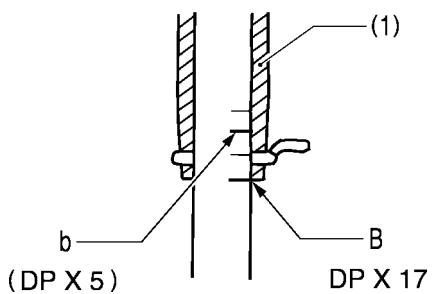


Turn the machine pulley to move the needle bar to the lowest position. Then remove the rubber plug (2), loosen the set screw (3) and then move the needle bar up or down to adjust so that the second reference line from the bottom of the needle (reference line **A**) is aligned with the lower edge of the needle bar bush (1).

\* If using a DP X 5 needle, use the highest reference line (reference line **a**).

#### 9-2. Adjusting the needle bar lift amount

2554Q

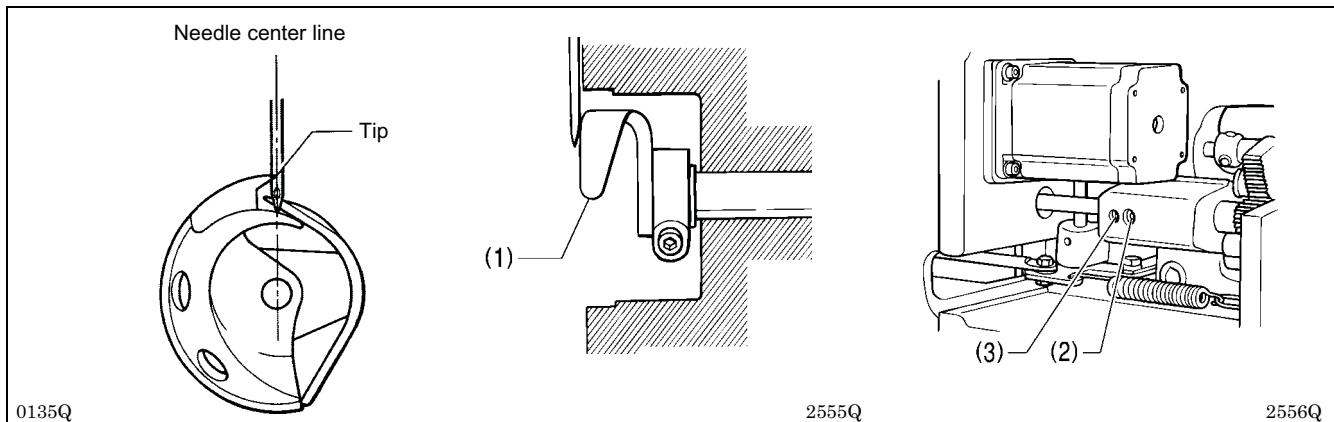


2464Q

Turn the machine pulley to raise the needle bar from the lowest position until the lowest reference line on the needle (reference line **B**) is aligned with the lower edge of the needle bar bush (1). Then loosen the screw (2) and move the driver (3) to adjust so that the tip of the rotary hook is aligned with the needle center line.

\* If using a DP X 5 needle, use the second reference line from the top of the needle (reference line **b**).

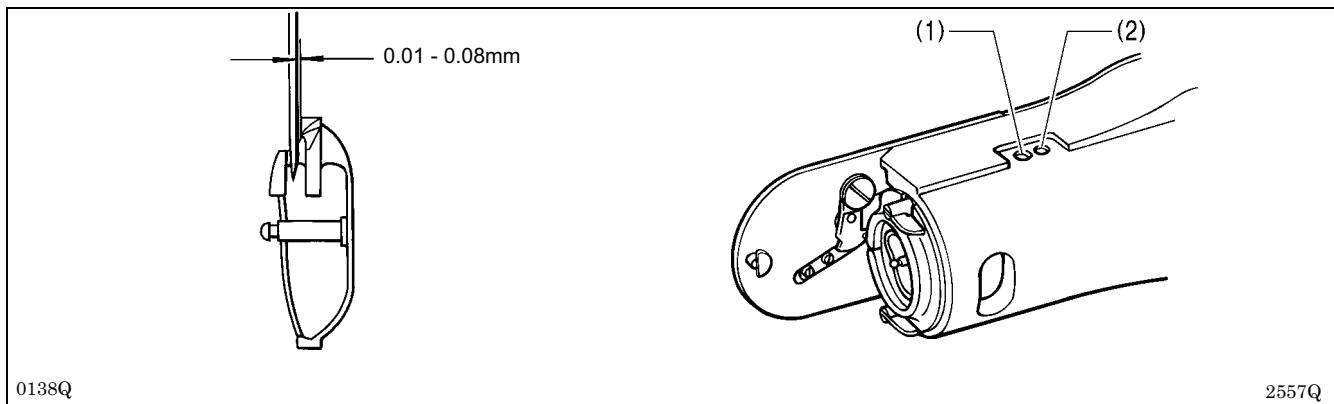
### **9-3. Adjusting the driver needle guard**



Turn the machine pulley to align the tip of the rotary hook with the needle center line. Then loosen the set screw (2) and turn the eccentric shaft (3) to adjust so that the driver needle guard (1) contacts the needle.

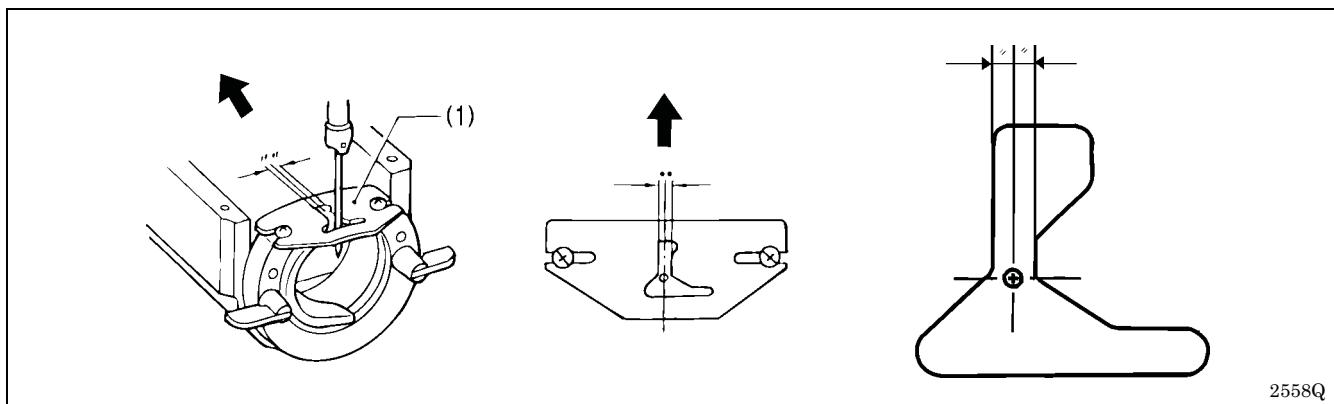
If the needle contact pressure is too great, skipped stitches may occur. On the other hand, if the driver needle guard (1) is not touching the needle, the tip of the inner rotary hook will obstruct the needle, resulting in an excessively high amount of friction.

## 9-4. Adjusting the needle clearance



Turn the machine pulley to align the tip of the rotary hook with the needle center line. Then loosen the set screw (1) and turn the eccentric shaft (2) to adjust so that the clearance between the needle and the rotary hook is 0.01 - 0.08 mm.

### **9-5. Adjusting the shuttle race thread guide**



Install the shuttle race thread guide (1) by pushing it in the direction of the arrow so that the needle groove is aligned with the center of the needle plate hole.

### Note:

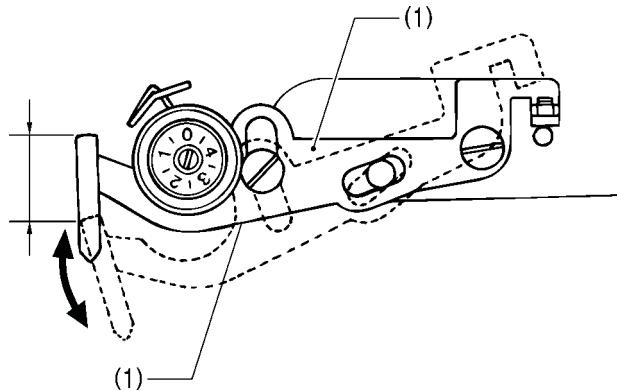
If the shuttle race thread guide is in the wrong position, thread breakages, soiled thread or catching of the thread may occur.

The position of the shuttle race thread guide is adjusted at the time of shipment from the factory. It should not be changed if at all possible.

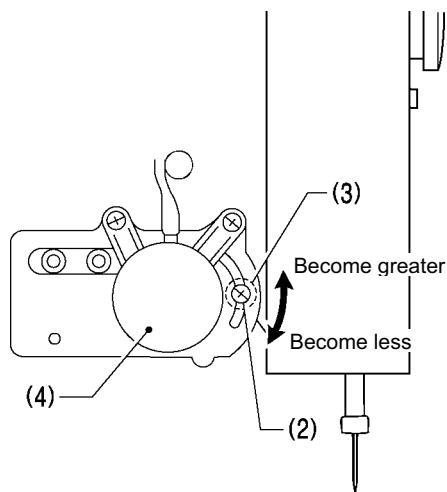
## 9. STANDARD ADJUSTMENTS

### 9-6. Adjusting the thread take-up amount

Thread take-up amount (stroke)



2559Q



2722Q

At the time of shipment from the factory, the thread take-up amount (stroke) of the thread take-up lever (1) is set to the standard setting of 5 mm. You may need to adjust this setting depending on the sewing conditions to prevent the thread from pulling out at the sewing start.

#### Adjustment method

Loosen the screw (2) and move the stopper (3.57 nut) (3) to adjust the operating angle of the thread take-up solenoid (4).

\* To reduce the thread take-up amount, move the stopper (3) downward.

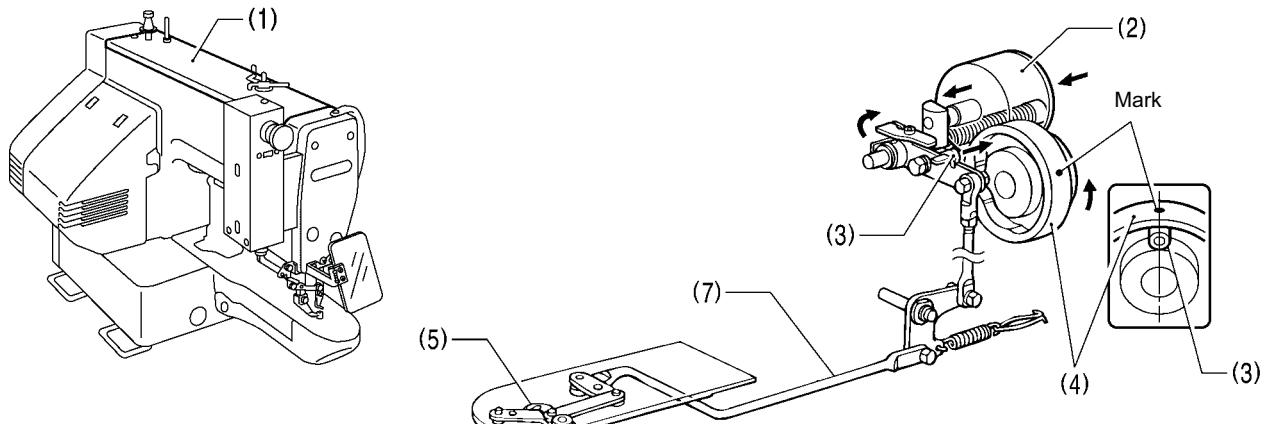
\* To increase the thread take-up amount, move the stopper (3) upward.

#### Note:

Do not increase the stroke of the thread take-up lever any more than is necessary.

If the sub-thread tension is too high, the needle thread length may become too short and the thread may come out of the needle. Furthermore, if the sub-thread tension is too weak, the needle thread length may become too long and the underside of the article being sewn may become untidy.

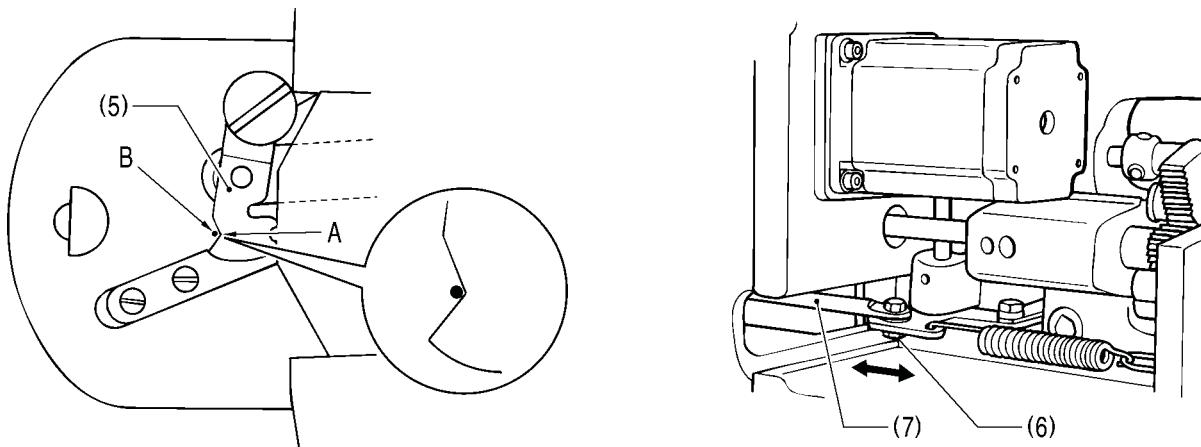
## 9-7. Adjusting the movable knife



2723Q

2561Q

1. Remove the top cover (1) while making this adjustment.
2. Press down on the plunger (2) of the thread trimming solenoid as shown in the illustration, and fit the roller (3) into the groove of the thread trimmer cam (4).
3. In this condition, turn the machine pulley to align the position of the roller (3) with the mark on the thread trimmer cam (4).



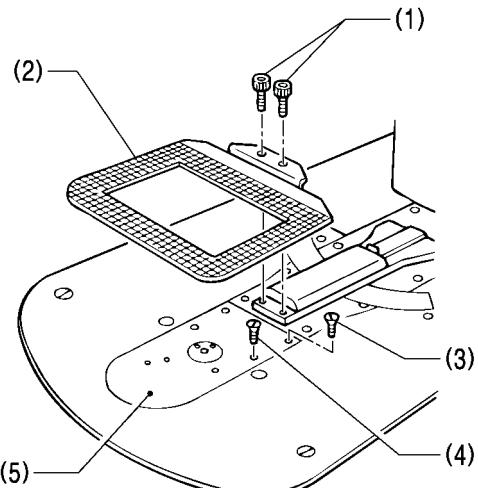
2562Q

2563Q

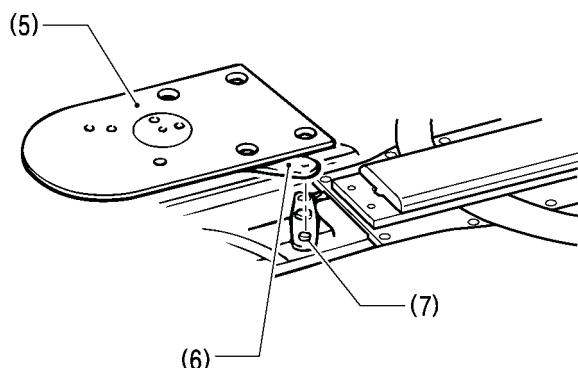
4. Loosen the nut (6) and move the connecting rod lever (7) to the left or right to adjust so that the V section A is aligned with the index mark B on the needle plate when in this condition (the procedure 3.) and the movable knife (5) is pushed to the machine pulley side so that there is no play.

## 9. STANDARD ADJUSTMENTS

### 9-7-1. Replacing the movable knife and fixed knife

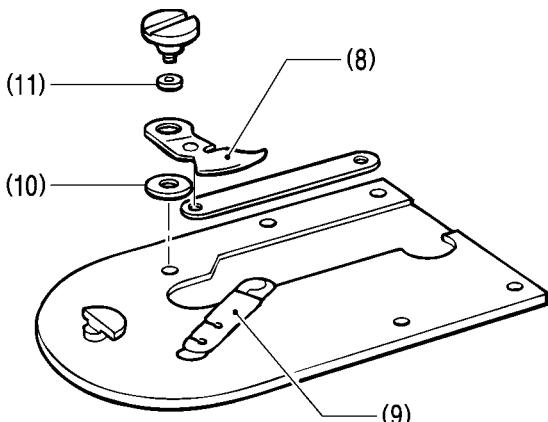


2615Q

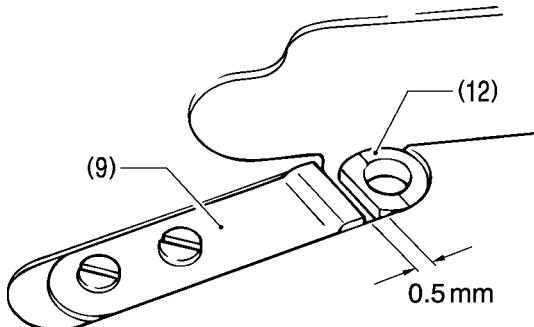


2485Q

1. Open the large shuttle hook cover, remove the bolts (1) and the feed plate (2).
2. Remove the two screws (3) and the two screws (4), and then remove the needle plate (5).
3. Remove the thread trimmer connecting rod (6) from the connecting rod lever pin (7).



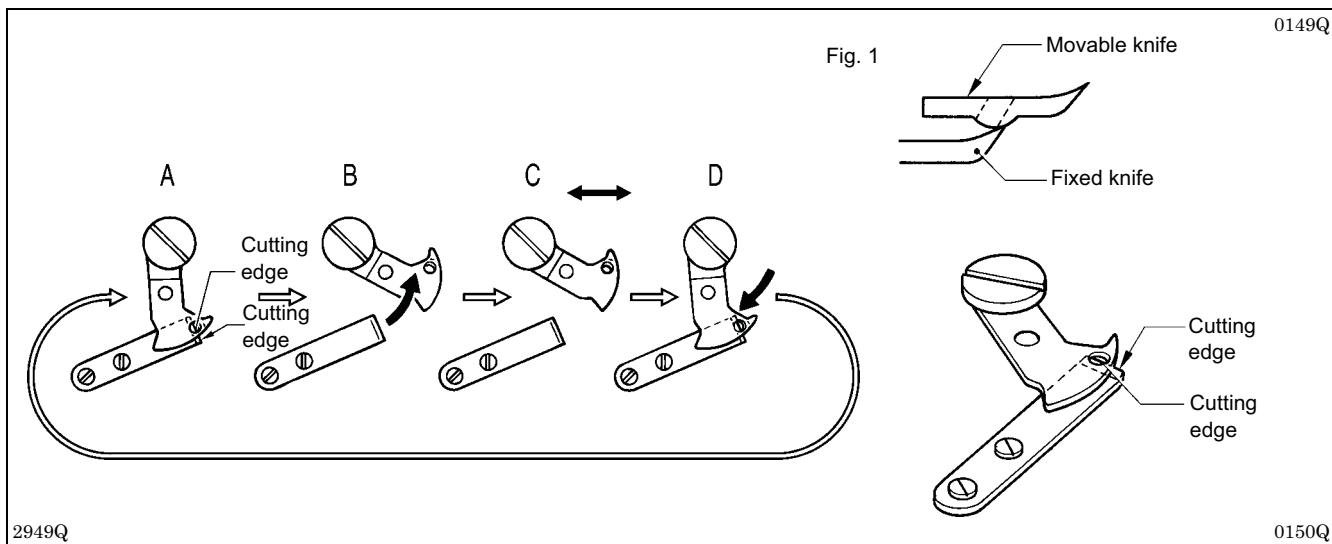
2946Q



2947Q

4. Remove the movable knife (8) and replace it with a new one. At this time, check that the movable knife (8) and the fixed knife (9) cut the thread cleanly. If necessary, adjust by using the appropriate movable knife washer (10) (supplied as accessories).  
\* Apply grease to the outside of the collar (11) at this time.
5. Install the fixed knife (9) at a distance of 0.5 mm from the needle hole plate (12).
6. Place the thread trimming connecting rod (6) onto the connecting rod lever pin (7), and then install to the needle plate (5).

## 9-7-2. Adjusting the engagement of the movable knife and fixed knife



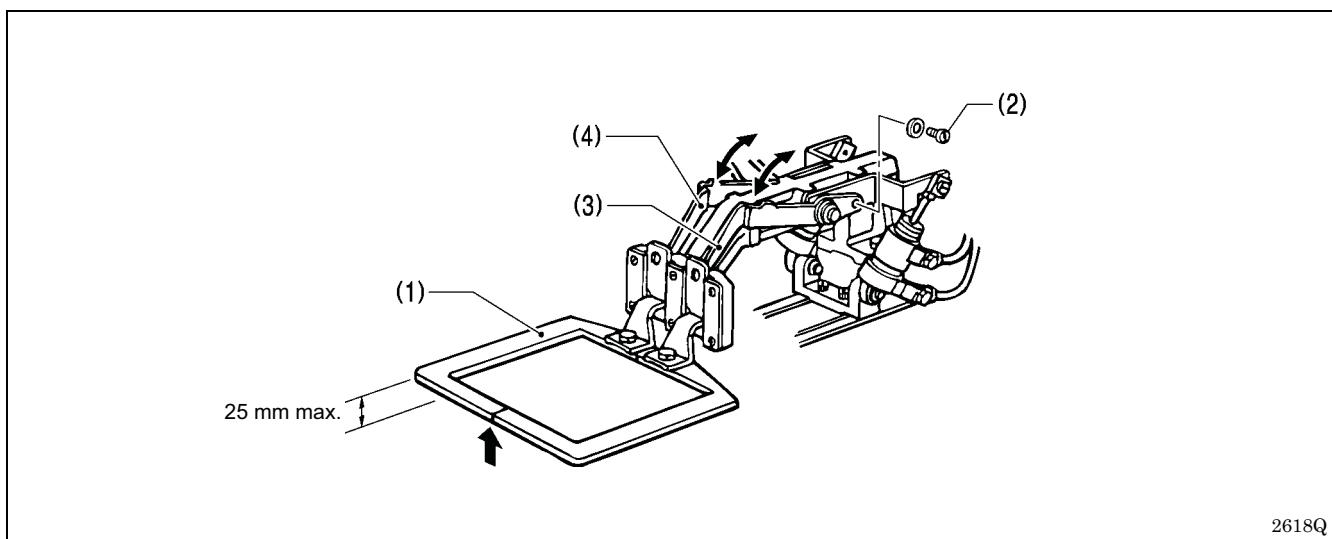
- After the movable knife and fixed knife are properly engaged, tighten the screw as shown in Fig. 1.
  - Turn the movable knife (in the direction of the arrow) while the screw is still tightened.
  - Loosen the screw.
  - Turn the movable knife (in the direction of the arrow) while the screw is still loosened.
- Repeat above steps A, B, C and D four or five times to maintain the cutting performance of the knife.

## 9-8. Adjusting the work clamp lift amount

The maximum work clamp lift amount is 25 mm from the top of the needle plate.

The lift amount is adjusted as shown in the table at the time of shipment.

Uses	Medium materials	Heavy materials
Lift amount	$10^{+1}_0$ mm	$14^{+1}_0$ mm

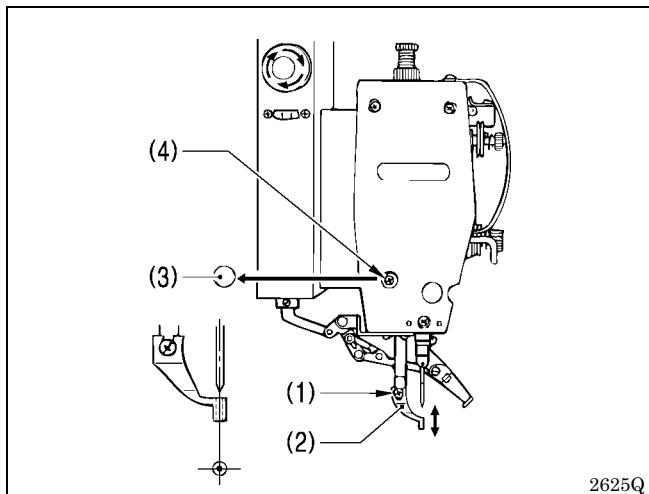


- Raise the work clamp (1) and loosen the screws (2).
  - Adjust the work clamp lift by moving the presser levers (3) and (4) up and down and then tighten the screws (2).
    - If movement is sluggish when the work clamp (1) is being raised and lowered, it may not be possible to increase the work clamp (1) lift amount.
- Apply grease to the sliding part of the work clamp (1) (grease is already applied at the time of shipment), and check that the movement becomes easier.

## 9. STANDARD ADJUSTMENTS

### 9-9. Work clamp adjustment

Turn the pulley to hand to lower the work clamp to the down position, and then proceed with the steps below.



1. Loosen screw (1), set the bottom of the work clamp (2) lightly against the work piece, and then tighten screw (1).

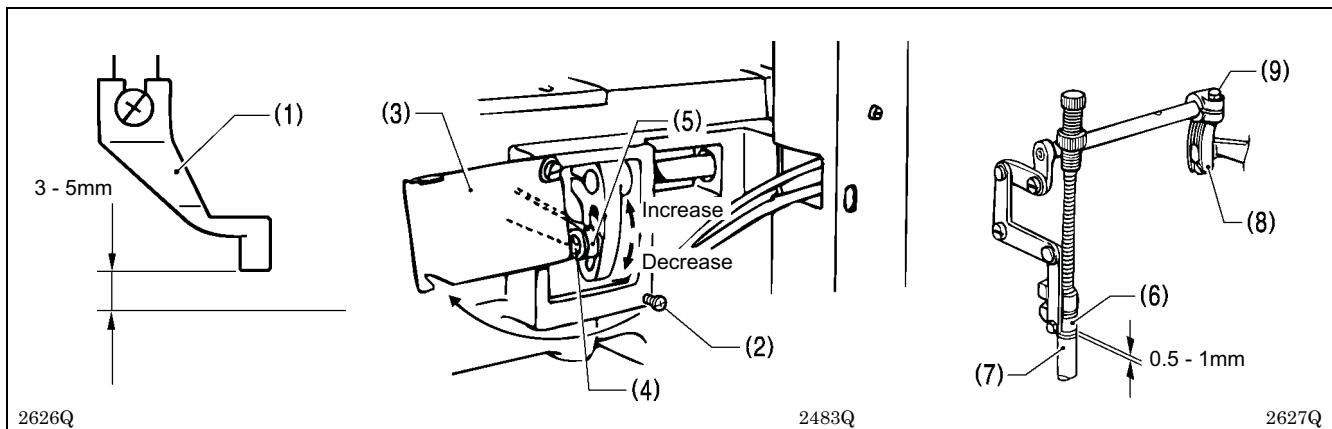
**Note:**

If the work clamp is lowered too far, the work piece will shift when sewing. Also, if the work clamp is too high, skipped stitches may occur.

2. Turn the pulley by hand, and make sure the needle enters the center of the needle hole in the work clamp (2). If the needle is not aligned with the center of the needle hole, remove cap (3), loosen screw (4), and turn the work camp (presser bar) to adjust.

### 9-10. Changing the work clamp lift

Standard work clamp (1) lift is 3 mm (max. 8 mm).



#### Adjusting work clamp lift to 3 - 5 mm

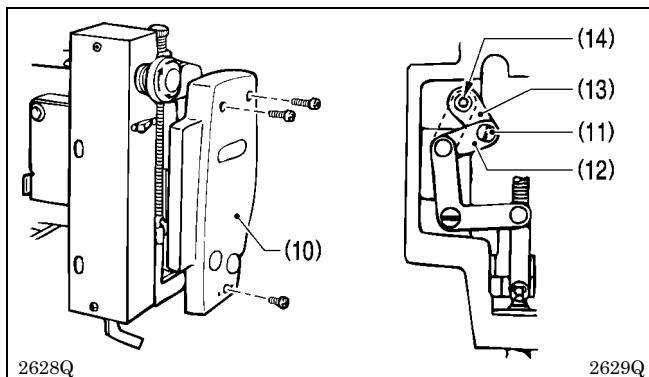
1. Loosen the screw (2) and open the stepping cover (3).
2. Loosen the nut (4) and adjust the stepping work clamp connecting rod (5) position.

\* When the stepping work clamp connecting rod is raised, the lift will increase. When lowered, the lift will decrease.

#### Adjusting work clamp lift to 5 - 8 mm

1. Turn the upper shaft to set the work clamp to its lowest point. Loosen the screw (9) of stepping work clamp arm (R) (8). Adjust the clearance between the presser bar lifter (6) and the presser bar bush (7) to 0.5 - 1 mm.
2. Loosen the nut (4) and adjust the stepping work clamp connecting rod (5) position.

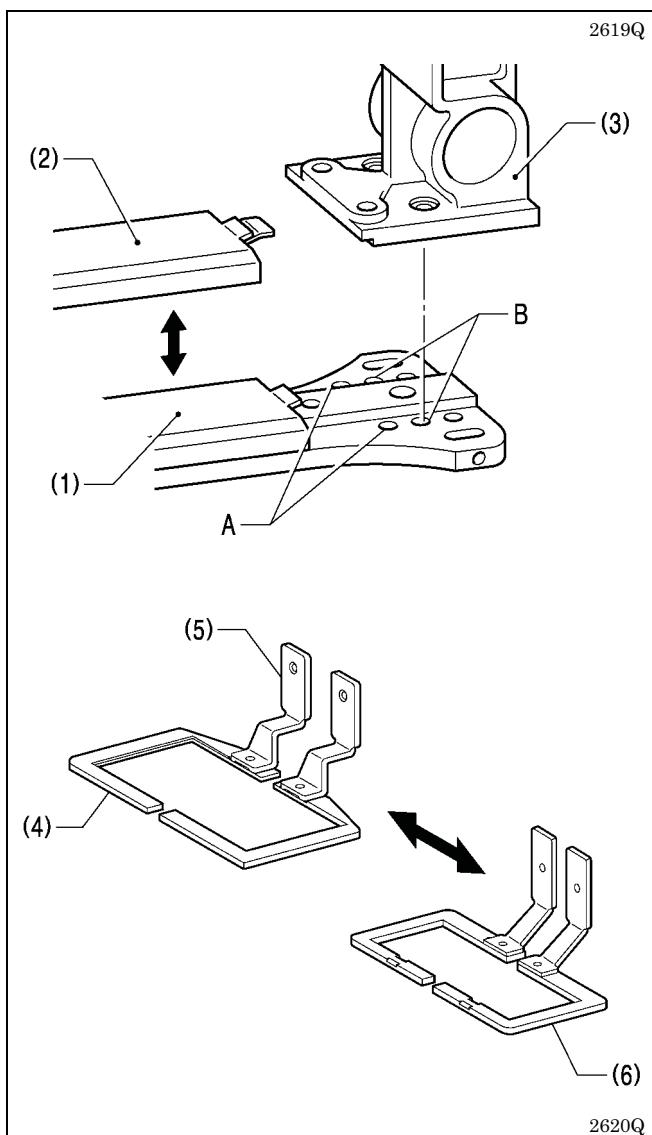
\* When the stepping work clamp connecting rod is raised, the lift will increase. When lowered, the lift will decrease.



#### If vertical movement of the work clamp is not required

1. Remove the face plate (10).
2. Remove the stud screw (11) and re-attach the stepping connecting rod (12) to the upper screw hole (14) of the stepping work clamp arm (F) (13).

## 9-11. Work clamp interchangeability



The BAS-311E, 311F work clamp can also be used with the KE-436C.

Replace the feed bar guide cover (1) with the feed bar guide cover assembly, LL (2) (optional).

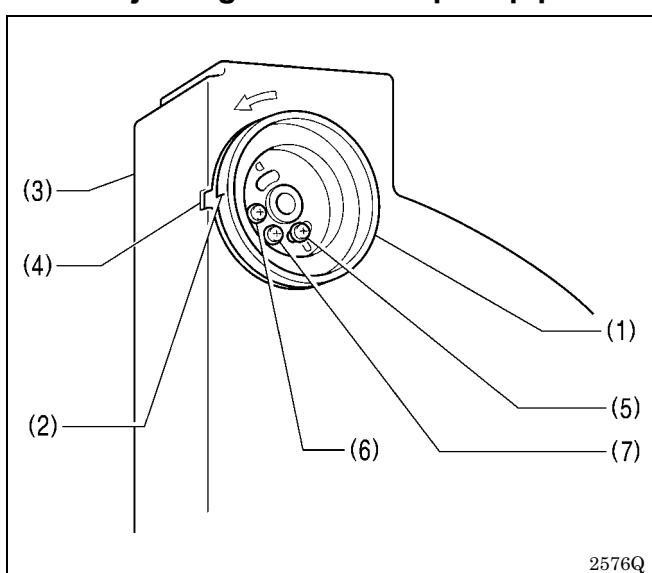
Then, change the installation position for the presser arm assembly (3) from the standard installation position A to installation position B.

### To use the BAS-311E, 311F work clamp and the KE-436C work clamp interchangeably

Use the optional work clamp 434EMK2 air (5) with the KE-436C work clamp.

It can then be used interchangeably with the BAS-311E, 311F work clamp (6) at installation position B.

## 9-12. Adjusting the needle up stop position



The needle up stop position is adjusted so that the index mark (2) on the machine pulley (1) is inside the mark (4) on the belt cover (3).

If adjustment is necessary, loosen the screw (5) at the "U" mark of the machine pulley (1) and adjust the position of the machine pulley (1). The machine pulley (1) stops later if it is turned clockwise, and it stops earlier if it is turned counterclockwise.

#### Note:

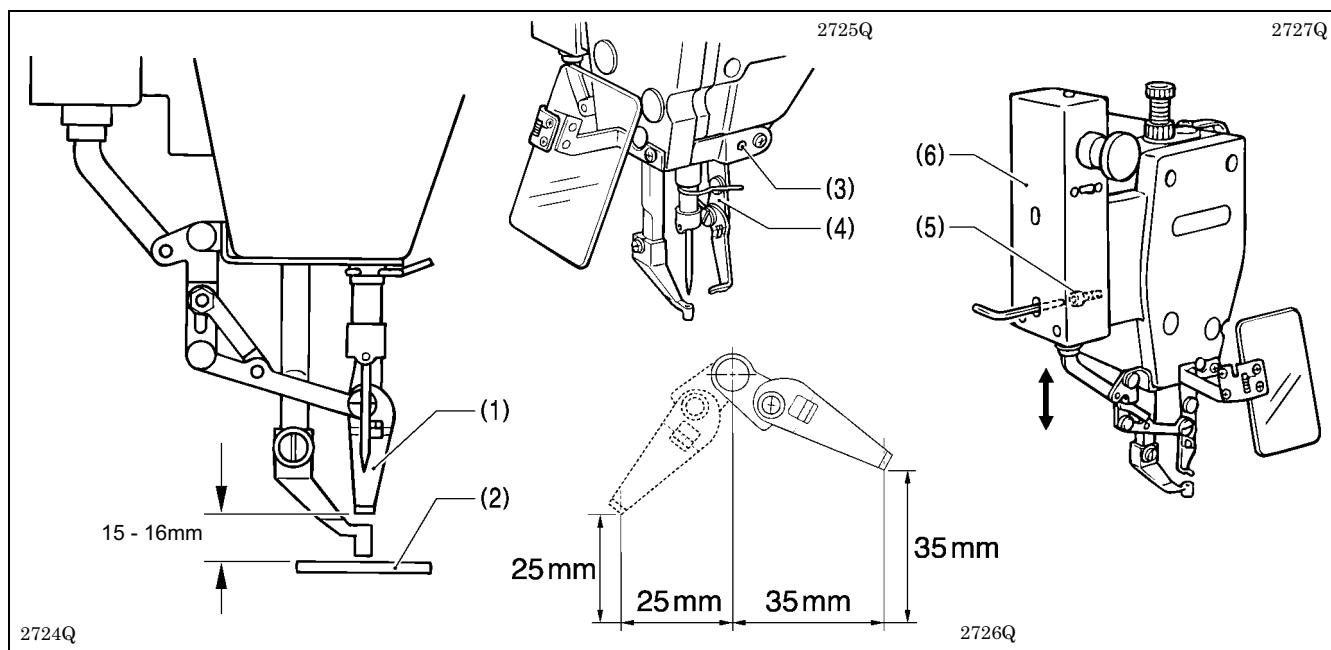
The screw (6) at the "D" mark is an adjusting screw for the needle down detection function and is adjusted to match the feed timing, so it should not be loosened.

The screw (7) is a screw for detecting the machine stop position, and should not be loosened.

\* If the index mark (2) is not inside the mark (4) when the sewing machine is started, error code "E.22" will be displayed (when memory switch No.14 is on). Turn the machine pulley to move the index mark (2) to the correct position and then start the sewing machine.

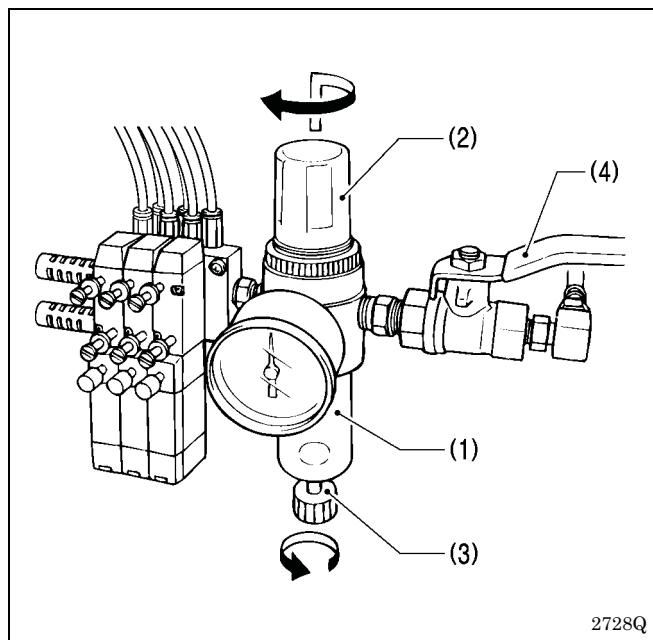
## 9. STANDARD ADJUSTMENTS

### 9-13. Adjusting the thread wiper



1. Loosen the set screw (2) and move the wiper arm support (3) up or down to adjust so that there is a clearance of 15 - 16 mm between the bottom of the thread wiper and the tip (1) of the needle when the thread wiper is aligned with the center of the needle bar.
2. After the thread wiper has wiped the thread, loosen the bolt (5) and move the whole solenoid fixing plate (6) up or down to adjust so that the distance is approximately 25 mm.

### 9-14. Adjustment of air pressure

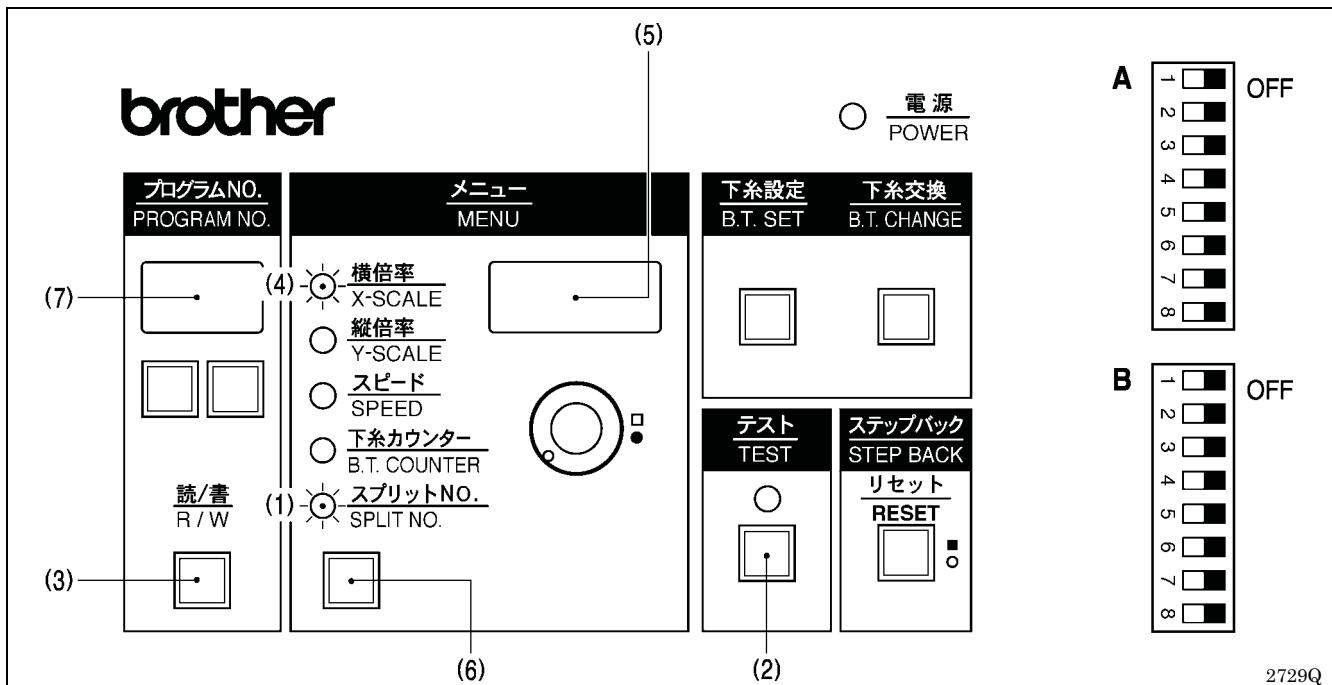


1. Air pressure should be 0.5 Mpa.  
The air pressure can be adjusted by pulling up and turning the control knob (2) on the integrator (1).  
After adjustment is complete, push the control knob (2) downward to lock it.
2. If water stands in the bottle of the integrator (1), turn the drain cock (3) in the direction indicated by an arrow to drain the water.

**Note:**

Open the air cock (4) slowly.

## 9-15. Checking the input sensor and DIP switch input



- When the SPLIT NO. indicator (1) is illuminated and the R/W switch (3) is pressed while the TEST switch (2) is being pressed, the X-SCALE indicator (4) will illuminate and the state of the X home position signal will appear on the display screen (5).

When sensor is ON



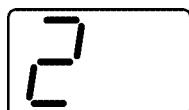
When sensor is OFF



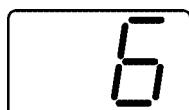
- Each time the MENU switch (6) is pressed, a different indicator will illuminate and the operating condition for the corresponding item will appear on the display screen (5).

• When X-SCALE indicator is illuminated	:	X home position sensor
• When Y-SCALE indicator is illuminated	:	Y home position sensor
• When SPEED indicator is illuminated	:	Needle up signal (synchronizer)
• When B.T. COUNTER indicator is illuminated	:	24-section signal (synchronizer)
• When SPLIT ON. indicator is illuminated	:	Needle down signal (synchronizer)

- If the settings for DIP switch A at the side of the operation panel are changed at this time, the number of the changed switch will appear in the top row of the program number display (7).



- If the settings for DIP switch B are changed at this time, the number of the changed switch will appear in the bottom row of the program number display (7).



- Press the TEST switch (2). The display will return to normal.

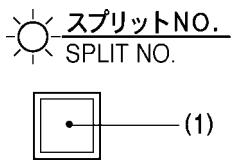
**Note:**

You need to move the DIP switch while the power is still turned on in order to check the DIP switch operation. However, the power must always be turned off before DIP switch settings can be changed.

## 9. STANDARD ADJUSTMENTS

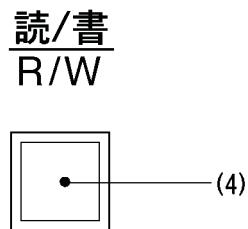
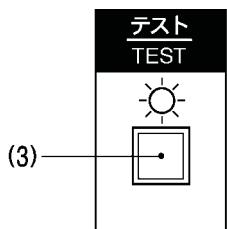
### 9-16. Checking the input voltage

1. Turn on the power switch.
2. Press the menu switch (1) until the X-SCALE indicator (2) illuminates.



2730Q

3. While pressing the TEST switch (3), press the R/W switch (4).



2731Q

4. If the input voltage is normal, the input voltage conditions will be shown in the display as indicated in the table below.

200-V specifications	090 - 110	"100" is displayed when the input voltage is 200 V.
220-V specifications	100 - 120	
230-V specifications	105 - 125	"110" is displayed when the input voltage is 100 V (for 100-V specs.), 380 V (for 380-V specs.), 400 V (for 400-V specs.).
100-V, 380-V, 400-V	100 - 120	

5. Press the TEST switch (3) once more to return the display to the normal condition.

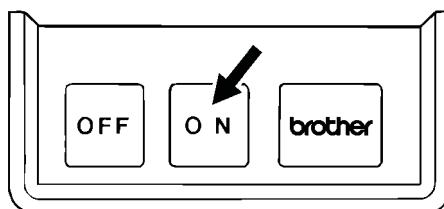
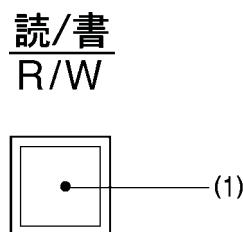
### 9-17. Clearing all memory settings

If the sewing machine stops operating normally, the cause may be that an incorrect memory setting may have been made by means of the memory switch, for instance. In such cases, carry out the following procedure to clear the memory, and also check the DIP switch settings.

While pressing the R/W switch (1), turn on the power. This will clear all of the memory setting.

**Note:**

This operation causes memory switch settings to be returned to their initial settings, and also clears all contents of the memory such as user programs.



2732Q

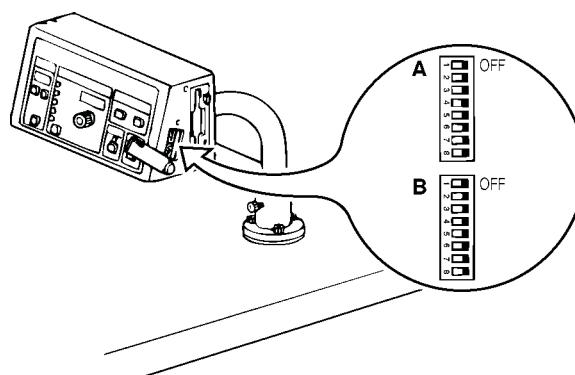
## 10. DIP SWITCH

**Note:**

When changing DIP switch, the power must be off.

### 10-1. Panel DIP switch functions

1086Q



All DIP switches are set to OFF at the time of shipment.

#### DIP switch A

Switch	Motion when set to ON	
DIPA-1	Presser does not automatically lift after sewing is completed.	See "12. Setting the presser mode"
DIPA-2	Pedal mode is switched.	
DIPA-3	–	
DIPA-4	–	
DIPA-5	After sewing is completed, work clamp does not automatically rise. (only in split mode)	
DIPA-6	Clamping force output is produced. (Inner clamping device available as an option)	
DIPA-7	–	
DIPA-8	Thread breakage detector device is activated (available as an option).	

#### DIP switch B

Switch	Motion when set to ON
DIPB-1	Single split mode activated
DIPB-2	–
DIPB-3	Thread is not trimmed after an emergency stop.
DIPB-4	Needle cooler output is produced. (Needle cooler available as an option)
DIPB-5	When a rotating-type thread breakage detector device is used, detection precision is increased from 8 to 14. When a fiber-type thread breakage detector device is used, detection precision is increased from 5 to 10.
DIPB-6	Fiber-type thread breakage detector device is ON, and DIP switch A-8 is ON (available as an option).
DIPB-7	–
DIPB-8	–

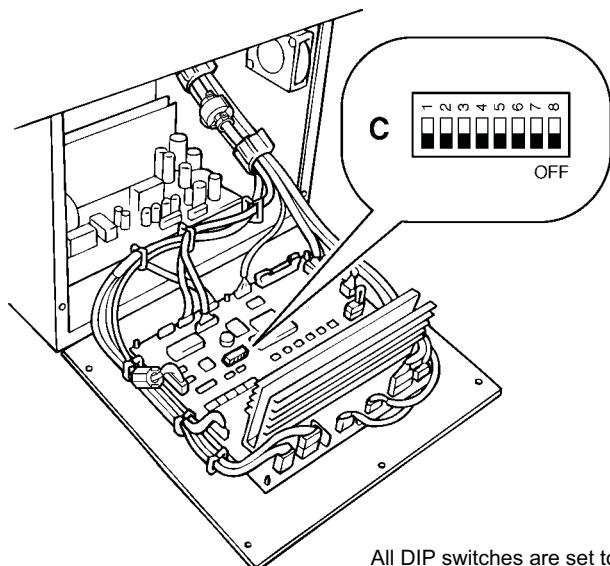
## 10. DIP SWITCH

### 10-2. DIP switches inside the control box

#### **DANGER**



Wait at least 5 minutes after turning off the power switch and disconnecting the power cord from the wall outlet before opening the face plate of the control box. Touching areas where high voltages are present can result in severe injury.



All DIP switches are set to OFF at the time of shipment.

**Note:**

When opening the cover, hold it securely so that it does not fall down.

1087Q

#### DIP switch C

Switch	Motion when set to ON
DIPC-1	First two stitches are sewn at a low speed of 260 rpm.
DIPC-2	Last two stitches are sewn at a low speed of 260 rpm.
DIPC-3	—
DIPC-4	Last two stitches are sewn at a low speed of 700 rpm.
DIPC-5	First two stitches are sewn at a low speed of 400 rpm.
DIPC-6	Low speed sewing is not performed at the start of sewing.
DIPC-7	The motor operates in reverse when the upper shaft stops, to return the needle bar to close to its highest position. *Note
DIPC-8	During an emergency stop, the thread is trimmed and the needle bar stops in the raised position.

**\*Note:**

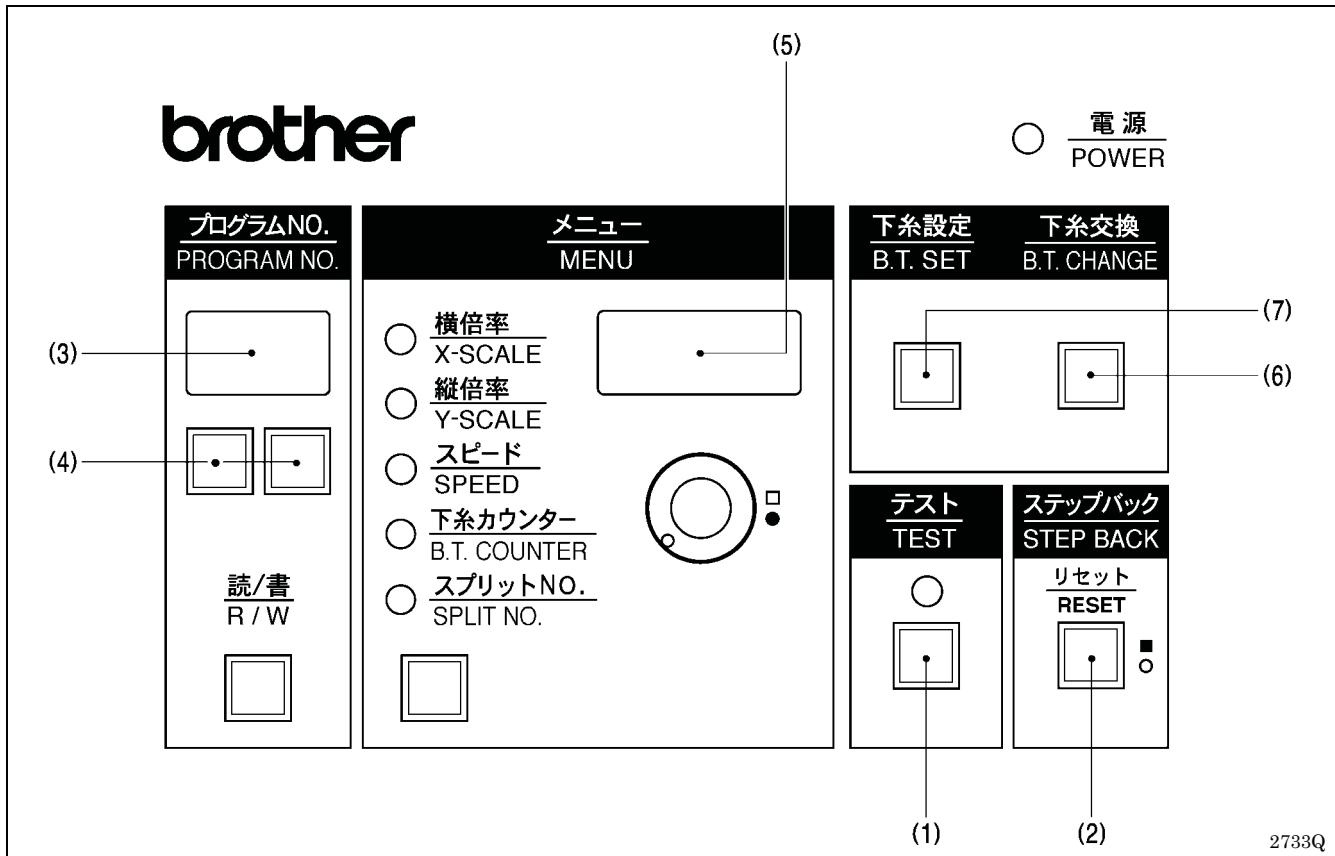
When the motor operates in reverse to raise the needle, the thread take-up will stop at a position which is lower than its normal stopping position. As a result, the thread take-up will rise slightly at the sewing start, and this may result in the thread pulling out under certain conditions.

## 11. CHANGING SPECIAL FUNCTIONS USING THE MEMORY SWITCHES

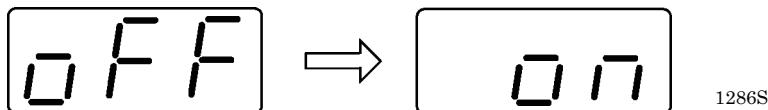
The functions of the switches on the operation panel can be changed to carry out special functions.

**Note:**

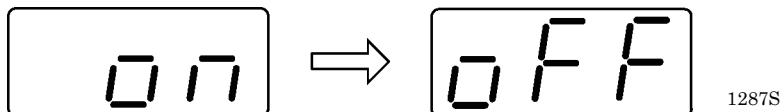
After changing the memory switch settings, press the power switch to turn the power off and then back on again.



1. Turn on the power switch.
2. While pressing the TEST switch (1), press the STEP BACK switch (2) to switch to setting mode.
3. Press the program select switch (4) so that the number displayed on the display screen (3) matches the switch number (00 - 3F) for the function that you would like to select from the table.
4. Press the STEP BACK switch (2) to switch the setting appearing in the display screen (5) from OFF to ON.



If pressed once more:



- If the B.T. CHANGE switch (6) is pressed at this time, all memory switch settings will be changed to OFF.  
 5. Press the TEST switch (1). The display will return to normal.

**Note:**

- The following steps set the memory switch settings separately for each program number.  
 6. Once the program data has been read from the floppy disk, change to memory switch setting mode and then press the B.T. SET switch (7). The buzzer will sound twice, and the current memory switch settings will be written to the floppy disk.

## 11. CHANGING SPECIAL FUNCTIONS USING THE MEMORY SWITCHES

### Memory switches (00–0F)

Switch No.	Motion when set to ON	Initial value
memo-00	When moving to the home position, the feed plate moves in the order $\theta \rightarrow r$ and the start position moves in the order $r \rightarrow \theta$ . (*1) (The feed plate does not move via the position that has been set by memo-3C.)	—
memo-01	When moving to the home position, the feed plate moves in the order $r \rightarrow \theta$ and the start position moves in the order $\theta \rightarrow r$ . (*1) (The feed plate does not move via the position that has been set by memo-3C.)	—
memo-02	—	—
memo-03	—	—
memo-04	Needle stops in up position during emergency stop. (Needle normally stops in down position.)	—
memo-05	When sewing is finished, the feed plate moves via the machine home position to the start position.	—
memo-06	After the final stitch, the work clamp rises and then the feed plate returns to the start position.	—
memo-07	Intermittent work clamp is not used (does not rise).	—
memo-08	When using an inner clamping device, the inner clamping device moves forward at the 1/4-way mark and returns at the 3/4-way mark for the pattern being sewn. (Inner clamping device is available as an option.)	—
memo-09	Changes the wiper to air drive. (Air wiper is available as an option.)	—
memo-0A	Jog feeding becomes faster during programming.	—
memo-0b	ON when a two-stage tensioner is used (available as an option).	—
memo-0c	—	—
memo-0d	Clearing the emergency stop switch action is carried out using the STEP BACK switch. <b>Note:</b> The factory default setting is ON, and it changes to ON when all memory settings are cleared.	ON
memo-0E	Test feeding is carried out at the same speed as normal sewing. (For checking feed operation)	—
memo-0F	After sewing is finished, the work clamp automatically opens and closes once. (practice operation) If memo-0E is ON, the work clamp opens and closes twice.	—

\*1: The  $\theta$  direction is rotation with reference to the x axis, and the  $r$  direction is rotation with reference to the y axis.

— : OFF

### Memory switches (10–1F)

Switch No.	Motion when set to ON	Initial value
memo-10	—	—
memo-11	Bobbin thread counter and production counter are adjusted when thread is trimmed.	—
memo-12	—	—
memo-13	—	—
memo-14	Needle up error detected.	—
memo-15	When using the inner clamping device, shunting to prevent interference between the inner clamping device and the needle is not carried out after the sewing end. (Inner clamping device is available as an option.)	—
memo-16	—	—
memo-17	—	—
memo-18	—	—
memo-19	—	—
memo-1A	—	—
memo-1b	—	—
memo-1c	Bobbin thread counter is decremented at the start of sewing.	—
memo-1d	When using an air pressure drop detection switch. (This detection switch is available by special order.)	—
memo-1E	Changes the split number automatically by using an external switch. (Use option connector P3 on the operation panel.)	—
memo-1F	Program number is changed automatically by using outside switch. (Use optional connector P3 on the operation panel.)	—

— : OFF

## 11. CHANGING SPECIAL FUNCTIONS USING THE MEMORY SWITCHES

### Memory switches (20 - 2F)

Switch No.	Motion when set to ON	Initial value
memo-20	During feed test operation, jump feeding 100 stitches at a time is possible using the STEP BACK switch.	—
memo-21	After the home position is detected and the machine moves to the sewing start position, the work clamp rises automatically.	—
memo-22	—	—
memo-23	—	—
memo-24	—	—
memo-25	The enlargement and reduction ratio settings at the operation panel are fixed at the values when memo-25 was set to ON.	—
memo-26	Thread trimming is not carried out.	—
memo-27	The sewing speed setting at the operation panel is fixed at the value when memo-27 was set to ON.	—
memo-28	Set to ON when using the thread take-up device.	ON
memo-29	Work clamp lifting and lower thread winding before home position detection are disabled.	—
memo-2A	—	—
memo-2b	—	—
memo-2c	—	—
memo-2d	—	—
memo-2E	—	—
memo-2F	When the input voltage is being checked, the display shows the temperature of the heat sink on the main circuit board instead of the voltage.	—

— : OFF

## 11. CHANGING SPECIAL FUNCTIONS USING THE MEMORY SWITCHES

### Memory switches (30 - 3F)

Turn the dial while pressing the STEP BACK switch to change the values.

Switch No.	Possible setting range	Units	Initial value	Explanation
memo-30	1 - 999	× 10ms	10	Time until feed mechanism starts moving after work clamp has lifted.
memo-31	1 - 5	—	4	Changes the feed speed. 1 (Fast) ↔ 5 (Slow)
memo-32	3 - 7	—	3	Changes the possible sewing speed for a given stitch length. 3 (Fast) ↔ 7 (Slow) 3 (2,500/3 mm), 4 (2,300/3 mm), 5 (2,000/3 mm), 6 (1,800/3 mm), 7 (1,200/3 mm)
memo-33	1 - 10	× 7.5°	5	Changes the feed timing. 1 (Fast) ← 5 (Standard) → 10 (Slow)
memo-34	1 - 5	stitch	1	Number of low-speed stitches sewn at 400 rpm at sewing start.
memo-35	3 - 9	× 100rpm	4	Changes the sewing start speed for the number of stitches specified by memo-34.
memo-36	—	—	—	—
memo-37	0 - 3	—	0	Automatically corrects the gear speed when reading 2DD disks. 0: No automatic correction 1: Read as BAS-311A data 2: Read as BAS-326A data 3: Read as BAS-341A, 342A data ex. Read BAS-326A data by KE-436C → Set memo-37=2.
memo-38	—	—	—	—
memo-39	0 - 11	—	0	Changes the reference point for enlargement and reduction using the operation panel. 0, 1: Center of work clamp, 2: Upper-left corner of work clamp, 3: Lower-left corner of work clamp, 4: Upper-right corner of work clamp, 5: Lower-right corner of work clamp, 6: Sewing start point, 7: Sewing end point, 8: Upper-left corner of sewing pattern, 9: Lower-left corner of sewing pattern, 10: Upper-right corner of sewing pattern, 11: Lower-right corner of sewing pattern
memo-3A	1 - 3	—	2	Changes the speed limit for the given sewing pitch when the maximum speed remains constant. 1: Speed limit is increased for the given sewing pitch and the sewing speed for that pitch is increased. 2: Standard 3: Speed limit is decreased for the given sewing pitch and the sewing speed for that pitch is decreased. <b>Note:</b> If sewing slippage occurs in places where a large sewing pitch is used, reduce the setting to 3. Furthermore, sewing slippage may occur in some cases if setting 1 is used.
memo-3b	0 - 13	—	0	Changes the work clamp operating mode. (When set to "0", the mode is selected according to the settings for DIP switches A-1 and A-2.) Refer to "12. Setting the work clamp mode" for details on the setting values.
memo-3c	0 - 4	—	0	Changes the path taken when moving from the machine home position to the start position. 0: Across inside of work clamp, 1: Top-left, 2: Bottom-left, 3: Bottom-right, 4: Top-right
memo-3d	—	—	—	—
memo-3E	—	—	—	—
memo-3F	—	—	—	—

## 12. SETTING THE WORK CLAMP MODE

Through the combination of DIP switches A-1 and A-2 on the operation panel, presser motions can be set as follows:

**When memo-3b = 0 (initial value)**

DIPA-1	DIPA-2	Pedal specifications	Raising the presser at the sewing end
–	–	Two pedals	Presser is raised automatically, then it is lowered by pressing the pedal. (factory default settings)
ON	–	Two pedals	Presser is kept lifted while the presser pedal is pressed.
–	ON	Single pedal	Presser is raised automatically.
ON	ON	Single pedal	Presser is raised by pressing the pedal.

### Special memo-3b settings for pneumatic specifications

memo-3b	Pedal specifications	Raising the presser at the sewing end
5	Two pedals	Left presser drops when presser pedal is at the 1st step, and right presser drops when presser pedal is at the 2nd step. Raising is carried out in the reverse order. * Setting used when using the light work clamp function (Refer to "12-1. Light work clamp".)
6	Two pedals	Right presser drops when presser pedal is at the 1st step, and left presser drops when presser pedal is at the 2nd step. Raising is carried out in the reverse order.
7	Two pedals	The left/right operating sequence changes alternately for each item sewn when using two-pedal operation. Starts with right → left.
8	Three pedals (Option)	The left pedal is used to raise and lower the left presser, and the right (center) pedal is used to raise and lower the right presser. The start (right) pedal is used to start sewing. Furthermore, when DIP switch A-2 is at ON, and if one presser is already lowered, pressing the start pedal causes the other presser to be lowered and then sewing starts.
9	Two pedals	When the presser pedal is depressed to the 1st step, both left and right pressers are raised simultaneously. When it is pressed to the 2nd step, sewing starts.
10	Two pedals	When the start pedal is depressed, both left and right pressers are lowered simultaneously. When the start pedal is released, sewing starts.
11	Three pedals (Option)	The left pedal raises and lowers the left and right work clamps, and the right pedal (center) detects the home position. The start (right) pedal is used to start sewing. Furthermore, both work clamps are lowered when DIP switch A-2 is ON, and the stepping foot is also lowered at the same time.
12	Three pedals (Option)	The left pedal raises and lowers the left work clamp, and the right pedal (center) detects the home position. When the start pedal (right side) is depressed for a short time (200 ms), the right work clamp is lowered, and when it is depressed for a longer time the right work clamp is lowered and then sewing starts. Furthermore, the right work clamp is lowered when DIP switch A-2 is ON, and the stepping foot is also lowered at the same time.
13	Two pedals	Two-pedal operation raises and lowers the left and right work clamps simultaneously, and the stepping foot is lowered at the sewing start.

When memo-3b has been used to make a special setting, DIP switches A-1 and A-2 function as follows.

- When DIP switch A-1 is at ON, the pressers are not raised automatically at the sewing end.
- DIP switch A-2 is ignored except when memo-3b = 8, 11, 12.

## 12. SETTING THE WORK CLAMP MODE

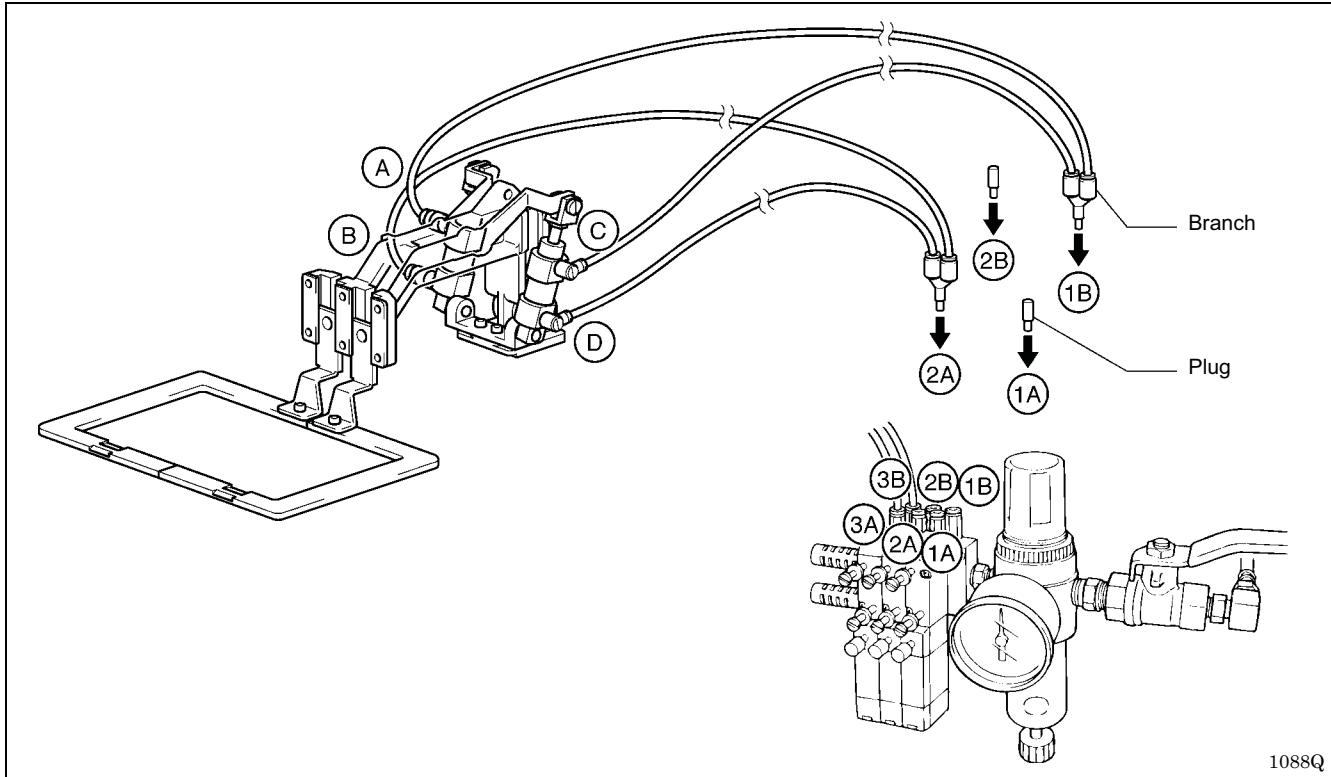
### 12-1. Light work clamp

For pneumatic specifications, the hose connections can be changed so that the pressers are made to lower gently when the presser pedal is depressed to the 1st step, and firmly when the presser pedal is depressed to the 2nd step. This makes it easier to carry out position matching when attaching small articles such as labels.

#### [Memory switch setting]

Set memo-3b to 5 for two-pedal mode so that the pressers lower in the order of left then right for the standard hose connection. (Refer to "11. Changing special functions using the memory switches".)

#### < Hose connections for light work clamp operation by both pressers >



#### [How to use]

1. Depress the presser pedal to the 1st step to lower the pressers and apply a light pressure. You can then position small articles such as labels at this time.
2. After checking that everything is positioned correctly, depress the presser pedal to the 2nd step to firmly clamp the article being sewn.
3. Press the start pedal to start sewing.

#### <Other hose connections and corresponding operations>

The hoses can be connected in combinations other than the one shown above so that only one side of the presser operates in light work clamp mode.

Branch and plug connectors	Cylinder connectors				Operation when presser pedal is depressed to the 1st step
	A	B	C	D	
Branch: 1B, 2A Plug: 1A, 2B	1B	2A	1B	2A	Both pressers operate in light work clamp mode (example shown above)
Branch: 1B Plug: 2B	1B	2A	1B	1A	Only left presser lowers, and it lowers in light work clamp mode
Branch: 1B Plug: 2B	1B	1A	1B	2A	Only right presser lowers , and it lowers in light work clamp mode
Branch: 2A Plug: 1A	1B	2A	2B	2A	Both pressers lower, but only left presser lowers in light work clamp mode
Branch: 2A Plug: 1A	2B	2A	1B	2A	Both pressers lower, but only right presser lowers in light work clamp mode

## 13. TABLE OF ERROR CODES

### **DANGER**



Wait at least 5 minutes after turning off the power switch and disconnecting the power cord from the wall outlet before opening the face plate of the control box. Touching areas where high voltages are present can result in severe injury.

If a malfunction should occur with the sewing machine, a buzzer will sound and an error code will appear in the display window. Follow the remedy procedure to eliminate the cause of the problem.

Code	Cause	Remedy
E.10	Emergency stop switch was pressed.	Turn the EMERGENCY STOP switch clockwise to release the lock, and then press the STEP BACK (RESET) switch to reset the error.
E.11	Emergency stop switch was pressed during sewing.	Turn the EMERGENCY STOP switch clockwise to release the lock, and then press the STEP BACK (RESET) switch to reset the error. You can then press the STEP BACK (RESET) switch to repeat the sewing.
E.12	Emergency stop switch is activated or its connection is not correct.	Turn off power and check it.
E.13	Defective connection of model selection connector.	Turn off power and check connector P3.
E.14	Foot switch was depressed, or connection of foot switch is defective.	Turn off power and check it.
E.15	Start switch was depressed, or connection of start switch is defective.	Turn off power and check it.
E.16	Machine head was tilted back.	Turn off power and tilt machine head back.
E.17	Operation panel switch was depressed when power was turned on.	Turn off power and check it.
E.20	Motor malfunctions or synchronizer is not connected correctly. Or thermostat inside sewing machine motor has operated.	Turn off power, and then turn the machine pulley to check if the machine has locked up. Check the synchronizer connection, and connectors P11, P12 and P13. Check if the sewing machine motor has overheated.
E.21	Motor malfunctioned.	Turn off power and check ground wire connection.
E.22	Needle up stop position error.	Turn pulley to align timing mark with that on belt cover.
E.30	Data exceeds available sewing area due to resize ratio.	Adjust resize ratio.
E.31	Stitch length exceeds 10mm due to resize ratio.	Adjust resize ratio.
E.32	No end code in sewing data.	Input end code, or change program No.
E.40	Floppy disk is not inserted or operation panel cable is not securely connected.	Insert a floppy disk. If floppy disk is already inserted, turn off the power and check the connections of cords inside the operation panel.
E.41	Invalid program No., or no data.	Change program No.
E.43	Different floppy disk!	Use original floppy disk.
E.4F	Error occurred during floppy disk data reading.	Replace the floppy disk and repeat the operation.

### 13. TABLE OF ERROR CODES

Code	Cause	Remedy
E.50	Floppy disk is write-protected	Release write-protection.
E.51	Insufficient available memory on floppy disk.	Use another floppy disk.
E.52	Can not format this floppy disk.	Change floppy disk.
E.5F	Error occurred during data writing on floppy disk.	Replace the floppy disk and repeat the operation.
E.60	Can not backup data. (Panel PCB)	Turn off power and then clear all of the memory setting.
E.61	Can not backup data. (Control PCB)	Turn off power and then clear all of the memory setting.
E.62	Operation panel error.	Turn off power and then on again.
E.63	Combination of control PROM and operation panel PROM is invalid.	Turn off power and check it.
E.80	Upper thread has broken. (Rotary type sensor)	Thread upper thread again. You can start sewing again.
E.81	Upper thread has broken. (Optical fiber type sensor)	Thread upper thread again. You can start sewing again.
E.90	Power supply voltage is extremely low, or power was turned on again immediately after it was turned off.	Turn off power and check voltage. After turning off the power, wait 30 seconds or more before turning it on again.
E.91	Power supply voltage is extremely high.	Turn off power and check voltage.
E.A0	Start switch was pressed when there was no sewing available data.	Read sewing data again.
E.A1	Can not detect home position. X-Y feed or connection of home position sensor is incorrect.	Turn off power and, check X-Y feed and connector P1.
E.c0	Motor PROM is not correctly inserted.	Turn off power and check it.
E.c1	Cooling fan in control box does not operate.	Turn off power and check whether any thread scraps have built up. Check fan connector.
E.c2	Heat-sink on main PCB is overheating.	Turn off power and clean air inlet port.
E.d0	Air pressure has dropped.	Turn off power and check it. If drops in air pressure are not being detected, clear all memory settings to set the memo-1d switch to OFF.
E.E0	Control PROM is not correctly inserted.	Turn off power and check it.
E.E1	Main PCB detected communication error.	Turn off power and then on again.
E.E2	Panel PCB detected communication error.	Turn off power and then on again.
E.E3	Incorrect connection of cable between operation panel and control box.	Turn off power and check it.
E.F0	Solenoid or feed motor short-circuit (malfunction of main circuit board) or power supply relay is not operating (malfunction of power supply circuit board).	Turn off power and check it.
E.F1	Incorrect connection of cable between power supply PCB and main PCB.	Turn off power and check connector P20.
E.F2	Overcurrent at power supply PCB.	Turn off power and check it.

#### REFERENCE segment LED alphabet

	Panel display										
	Text display	A	b	c	d	E	F	6	H	L	o

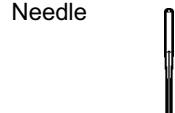
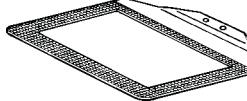
## 14. GAUGE PARTS LIST ACCORDING TO SUBCLASSES

The following are standard gauge parts according to each specification.

(In the following table, parts marked with ★ are common with the LK3-B430E; parts with ☆ are common with the BAS-311F.)

Part name Specification	Medium materials	Heavy materials	Extra heavy materials
Needle hole plate 	(φ2.2) S49980-001 FM	(φ2.6) S10212-101 E	★
Bobbin case assy 	159610-301 A ★	152690-401 B	★
Tension spring 	154339-101 A ★	154340-101 B	★
Screw 		S48664-001 AN	★
		154341-001	★
		S16492-101 LA	☆
Spring, anti-spin 	159612-001 A ★	154342-001 B	★
		S15667-001 LA	☆
Bobbin 	159613-051 ★	154663-001 B	★
		S44633-001 LAN	
Shuttle hook, W/BOX 	152685-903 A ★	152687-902 B	★
	S59161-991 LF	S59162-991 LG	
Shuttle race body 	152682-101 A ★	152686-101 B	★
Spring tension 	104525-001 ★	107606-001 ★	S06548-001 C
Spring 	145519-001 ★	144588-001 B	★

## 14. GAUGE PARTS LIST ACCORDING TO SUBCLASSES

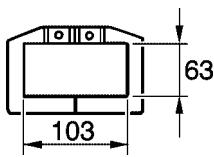
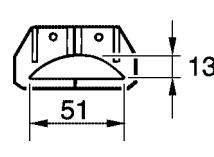
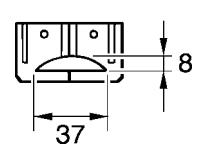
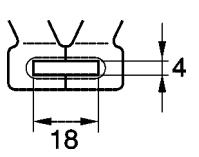
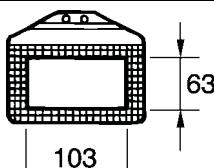
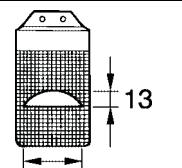
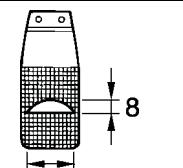
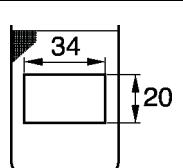
Specification Part name	Medium materials	Heavy materials	Extra heavy materials
Thread guide, needle bar  A  B	S41222-101 B	★ S02438-001 A	★ S02439-001 B
Needle assy	107415-414	★ S37928-419	★ 145646-425
Needle 	DP × 5 #14 107415-014	★ DP × 17NY #19 S37928-019	★ DP × 17 #25 145646-025
Work clamp 	—	434ESF-2R S46544-001  434ESF-2L S46545-001	—
Feed plate 	—	434ESF-2 S44942-001	—

### <Gauge parts>

The following are provided as optional gauge parts.

Each work clamp pair is used in combination with the feed plate directly below them.

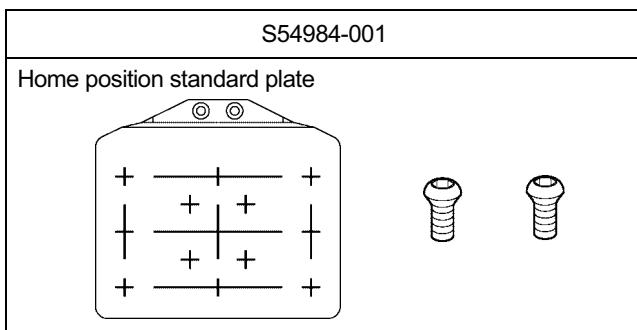
- Work clamps R, L and feed plate

	1	2	3	4
R	153493-001	S23377-001 (519)	S27836-001 (895)	156085-001 (M)
L	153498-001	S23378-001 (519)	S27837-001 (895)	156086-001 (M)
Work clamp	 63 103	 13 51	 8 37	 4 18
	153503-001	S23379-001 (519)	S27838-001 (895)	156087-001 (M)
Feed plate	 63 103	 13 51	 8 37	 34 20

## 14. GAUGE PARTS LIST ACCORDING TO SUBCLASSES

	5	6
R	156082-001 (L)	156088-001 (S)
L	156083-001 (L)	156089-001 (S)
Work clamp		
Feed plate	156084-001 (L) 	156090-001 (S) 

- Gauge assy, 434E MK2



- Needle hole plate

A	S10211-001	AF	S51449-001	BZ	S41013-001	D	S29997-001	E	S10212-101	ED	S30925-001
	 φ1.6 3		 φ1.6 3		 φ2.2 3		 φ2.6 3		 φ4 2.8 For heavy / extra heavy materials		 φ10 φ3.4 φ2.6 2.8 For heavy / extra heavy materials
F	S10213-001	FD	S30926-001	FM	S49980-001	H	S30450-001	L	S25127-001	M	S34348-001
	 φ2.2 3		 φ10 2.2 3		 φ2.2 3		 φ2.6 4.8 For medium materials		 φ4.7 φ3.3 2.8		 φ6.5 φ4 2.8
3	S40217-001										
	 φ6 φ3 2.8										

## 15. TROUBLESHOOTING

**CAUTION**

Turn off the power switch and disconnect the power cord before carrying out troubleshooting, otherwise the machine will operate if the foot switch is depressed by mistake, which could result in injury.

Problem	Cause	Check	Remedy	Page
<b>Work clamp does not rise.</b>	Work clamp operation is sluggish.	Sliding part of the work clamp lubrication	Grease the sliding part of the work clamp.	44
	Work clamp lift amount is too great.	Distance between work clamp and top of needle plate	Adjust the height of the work clamp to within 25 mm.	44
	Work clamp is contacting thread wiper.	Thread wiper standby position	Adjust the position of the thread wiper.	47
<b>Work clamp lift amount is incorrect.</b>	Incorrect position of presser arm lever plate.	Distance between work clamp and top of needle plate	Adjust the work clamp lift amount.	44
<b>Thread wiper does not operate correctly.</b>	The thread wiper is obstructing the needle.	Clearance between thread wiper and needle tip	Adjust the height of the thread wiper.	47
		Thread wiper position	Adjust the operating distance of the thread wiper.	47
	Thread wiper position is incorrect.	Thread wiper position	Adjust the operating distance of the thread wiper.	47
<b>Lower thread winds to one side.</b>	Bobbin winder thread tension stud height is incorrect.	Bobbin winder thread tension stud height	Adjust the height of the thread tension stud.	30
<b>Lower thread winding amount is incorrect</b>	Bobbin presser position is incorrect.	Thread winding amount	Adjust the position of the bobbin presser.	30
<b>Thread comes un-threaded.</b>	Stitches being skipped at the sewing start.	Refer to "Skipped stitches occur"	Refer to "Skipped stitches occur"	64
	Uneven upper thread length.	Upper thread length	Adjust the sub-tension.	32
	Upper thread is too short.	Thread take-up lever stroke	Adjust the thread take-up lever stroke.	41

Problem	Cause	Check	Remedy	Page
<b>Upper thread breaks.</b>	Upper thread tension is too strong.	Upper thread tension	Adjust the upper thread tension.	32
	Needle is installed incorrectly.	Needle direction	Install the needle correctly.	29
	Thread is too thick for the needle.	Thread and needle	Use the correct thread for the needle.	29
	Thread take-up spring tension and height are incorrect.	Thread take-up spring tension and height	Adjust the tension and height of the thread take-up spring.	33
	Damaged or burred rotary hook, needle hole plate or needle.	Damage or burring	File smooth or replace the affected part.	
	Thread melting (synthetic thread)	Thread edge	Use a thread cooling device (optional).	66
<b>Lower thread breaks.</b>	Lower thread tension is too strong.	Lower thread tension	Adjust the lower thread tension.	32
	Corners of needle hole plate or bobbin case are damaged.	Damage	File smooth or replace the affected part.	
<b>Skipped stitches occur.</b>	Clearance between needle and rotary hook tip is too great.	Needle clearance	Adjust the needle clearance.	40
	Incorrect needle and rotary hook timing.	Needle bar lift amount	Adjust the needle bar lift amount.	39
	Driver is contacting needle more than is necessary.	Clearance between driver and needle	Adjust the driver needle guard.	40
	Needle is bent.	Bent needle	Replace the needle.	
	Needle is installed incorrectly.	Needle direction	Install the needle correctly.	29
<b>Needle breaks.</b>	Needle is touching the rotary hook.	Needle clearance	Adjust the needle clearance.	40
		Needle bar lift amount.	Adjust the needle bar lift amount.	39
	Needle is bent.	Bent needle	Replace the needle.	
	Needle is too thin.	Needle and thread	Use the correct needle for the material.	

## 15. TROUBLESHOOTING

Problem	Cause	Check	Remedy	Page
<b>Upper thread is not trimmed.</b>	Movable knife is bent.	Movable knife blade	Replace the movable knife.	43
	Fixed knife is blunt.	Fixed knife blade	Sharpen or replace the fixed knife.	43
	Movable knife dose not pick up the thread.	Shuttle race thread guide position	Adjust the position of the shuttle race thread guide.	40
		Needle bar lift amount	Adjust the needle bar lift amount.	39
	The movable knife does not pick up the thread because of skipped stitches at the sewing end.	Skipped stitches at sewing end	Refer to "Skipped stitches occur".	64
	Movable knife position is incorrect.	Movable knife position	Adjust the position of the movable knife.	42
	Sub-tension is too weak.	Sub-tension	Turn the sub-tension nut to adjust the tension.	32
<b>Thread jamming.</b>	Thread take-up spring tension and height are incorrect.	Thread take-up spring tension and height	Adjust the tension and height of the thread take-up spring.	33
	Incorrect needle and rotary hook timing.	Needle bar lift amount	Adjust the needle bar lift amount.	39
	Shuttle race thread guide is not separating the threads.	Shuttle race thread guide position	Adjust the position of the shuttle race thread guide.	40
<b>Poor seam finish on reverse side of material.</b>	Shuttle race thread guide is separating the threads insufficiently.	Shuttle race thread guide position	Adjust the position of the shuttle race thread guide.	40
	Upper thread is not properly tight.	Upper thread tension	Adjust the upper thread tension.	32
	Uneven upper thread length.	Upper thread length	Adjust the sub-tension.	32
	Upper thread is too long.	Thread take-up lever stroke	Adjust the thread take-up lever stroke.	41
<b>Incorrect thread tightness.</b>	Upper thread tension is too weak.	Upper thread tension	Adjust the upper thread tension.	32
	Lower thread tension is too weak.	Lower thread tension	Adjust the lower thread tension.	32
	Thread take-up spring tension and height are incorrect.	Thread take-up spring tension and height	Adjust the tension and height of the thread take-up spring.	33
<b>Machine does not operate when power is turned on and foot switch is depressed.</b>	Head position switch does not work.	Head position switch cord connection	Check if the cord is disconnected.	9, 10
		Switching plate position	Adjust the position of the switching plate.	6
		Head position switch is broken.	Replace the head position switch.	

## 16. OPTIONAL PARTS

**Two-step foot switch**

This is a pedal-type foot switch.

**Liquid cooling tank**

This helps to prevent thread breakages caused by friction when using synthetic threads.  
Fill the tank with silicone oil (100 mm<sup>2</sup>/s).

**Three-pedal foot switch**

The switch has an independent left work clamp switch (left side), right work clamp switch (center) and start switch (right side).

**Work clamp plate, OT**

Use according to particular sewing needs in order to provide an even clamping force.

**Programmer assy**

Used to create sewing patterns for the KE-436C. It can also be used to display error messages.

**Thread breakage detector device**

Available as rotary type or fiber type, stops sewing when a thread breakage is detected and warns the operator.

**Needle cooler device**

This is a pneumatic-type needle cooler which prevents the thread breaking due to heat. It is particularly useful when sewing thicker materials at high sewing speeds.

**Air wiper device**

The thread wiper is driven by a pneumatic cylinder.

**2-step thread tension device**

Allows the upper thread tension to be switched between two settings at any position desired by using the programmer.

\*Refer to the separate Parts Book for details.

**brother**®



INSTRUCTION MANUAL

**BROTHER INDUSTRIES, LTD.**

15-1, Naeshiro-cho, Mizuho-ku, Nagoya 467-8561, Japan. Phone: 81-52-824-2177

Printed in Japan

118-P34  
S91P34-102  
2002.10.B(1)